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BOOK DEPARTMENT

The Work of Dwight James Baum

A Review by FRANK J. FORSTER

THE work of Dwight James Baum has now been published in a handsomely presented monograph, and to the architect and general reader alike there is displayed the diversity of the modern American country house, and one man's able handling of this diversity. On examining the wide range of work covered by the monograph, several conclusions at once form themselves in the mind. Here over a period of years were houses to design in a variety of types for a variety of people, yet the whole picture is one of consistency in the good taste shown, consistency in the practical solution of the modern house problem, consistency in sincerity and conscientiousness, and in the progress of the architect's skill and resourcefulness. No architect does the country at large a greater service than he who devotes his principal effort to the designing of small and moderate sized houses,—a field in which Mr. Baum has deservedly won wide popularity. His influence has always been on the side of good taste and toward better standards in the design of the American country house. It is this kind of house that influences the daily lives of the greatest number of people, and in all his work Mr. Baum has never lost sight of either the practical or the æsthetic sides of his problems. He has not compromised one for the sake of the other, and his houses are as a result admirably balanced. The work of few architects shows more progress.

House at Fieldston, Riverdale-on-Hudson, N. Y.
Dwight James Baum, Architect

In his early practice the then prevalent Dutch Colonial type of house was largely popularized by Mr. Baum's version of it. These houses compared well with contemporary work, but his later houses tell the story of his marked progress toward a deeper and surer understanding of his problems; more character is expressed, proportions and relations of masses are handled with greater freedom and ease, and a certain intensity noticeable in his earlier work takes on a pleasing graciousness of form. Certainly Mr. Baum's present work shows a conspicuous advance in taste over the general mediocrity of the architectural treatment of country houses 15 years ago. It is, in fact, this constant improvement over contemporary mediocrity that has spelled progress in Mr. Baum's work,—this and the constant study and thought he has devoted to every problem from the smallest Dutch Colonial cottage to the stately Tudor or Georgian mansion. Few architects take their profession more seriously or work more conscientiously than Mr. Baum, who is constantly active in the office or in personal supervision.

It is interesting to notice, through the illustrations of the monograph, how admirably the houses are related to their sites by planting and gardening. Every detail of garden gates and steps has evidently been thoughtfully studied, and the gardens compare favorably with the work of prominent landscape architects. The use of *treillage* for a tennis court enclosure is an admirable idea, well executed. Mr. Baum is at his best in adaptations of Colonial and Early American types, to which he has devoted a great deal of sincere study. This is evidenced in the Frank A. Sullivan house at Westerly, R. I., a house remarkably true to type, with all the essential character of the New England manner, not only in its general proportions, but in the complete authenticity of its details. The earlier American version is seen in the Dr. Wade Wright house at Fieldston. Here the type on which the treatment was based is that of the very old Colonial houses with overhanging second floors, and the handling is exceptionally fine and straightforward, scholarly, and balanced, without involving loss of charm.

In the introduction, which was written by Matlack Price, a distinction was made between "style" and "type" in speaking of architectural deviations, the thought being that "style" is an inaccurate designation as generally used, since it implies a literal transcript of the work of a given country or period. "Type," the argument proceeds, "more nearly applies to the American adaptation in which a type is designed with a style as its point of departure." The introduction is preceded by a foreword contributed by Harvey Wiley Corbett, and the presentation of the monograph is as much a credit to its publisher as the contents are a credit to the architect. Monographs on the work of currently practicing architects cannot but have the happy effect of directing public attention to the standards of taste and practice upheld.

THE WORK OF DWIGHT JAMES BAUM, 208 full pages, of which 192 are plates. 12½ x 16¼ ins. Price $20. William Helburn, Inc., 15 East 55th Street, New York.

An Authoritative Work on

"THE GREEK REVIVAL"

By HOWARD MAJOR

THE search for effective types of architecture for domestic use leads logically to the re-discovery of the style known as the "Greek Revival." In the hands of a few particularly skillful architects it is being used with marked success, their use being based largely upon study of such examples as have survived the period, just prior to the Civil War, when use of the type was widespread throughout the United States. It is an entirely American style, founded not upon a following of current English architecture but upon a study by Americans of classic types adapted to domestic uses.

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236 Pages; 7⅞ x 10⅝ inches. Price $15

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EARLY AMERICAN INNS AND TAVERNS. By Elise Lathrop. 365 pp., 6¼ x 9¼ ins. Price $5. Robert M. McBride & Co.

OLD American inns and taverns that weathered the lean period, when railway travel had put an end to their chief source of revenue for the time being, are now coming into their own since motoring and the pleasures of the road have beguiled hundreds of thousands to traverse anew those ancient highways over which stage coaches, carriers and drovers made their regularly scheduled journeys before the steam locomotive put an end to their usefulness. Inns and taverns were imperatively necessary in the heyday of their prosperity. Without them, travel and commerce would have been tremendously difficult or even well nigh impossible. But the inn was far more than merely a public convenience; it was an important institution in each community, a center for all manner of civic affairs and, in many instances, an architectural ornament to the village to which it contributed an element of distinctive character. Now that the popularity of motoring has again opened up to the general public many long-forgotten or remote portions of the country, the old hostelries have taken on new leases of life and have again become sources of interest.

In the 16 chapters of her book the writer has chronicled the charm of the old inns and taverns that remain as places of public entertainment, and of many more that survive as private dwellings or that serve in some capacity other than that for which they were originally built. She has described their architecture and related the notable incidents of their history. She has likewise dealt with their many-sided, intimate relations to the local social life, from their function in early days as post offices to their conspicuous position as the scenes of political meetings and elections as well as of balls and banquets. Unfortunately, no American Morland, Rowlandson or Pollard has left a series of pictures illustrative of old inn and tavern days and ways, but where the old hanging inn signs have disappeared, or where more drastic changes have obliterated items of compelling charm, the author has frequently reconstructed the picture sufficiently for the reader to perceive it clearly with the mind's eye; and in doing all this she has given wholesome stimulation to an interest in the many little things that characterized inns and the phases of life to which they ministered; she has also blazed the way so that observers with an architectural bias may know where to look for existing traces of earlier structural conditions.

Inns and taverns in the several parts of the country are geographically grouped by chapters so that reference and comparison are simplified as much as possible. Within the compass of these 16 chapters there is a wealth of curious and diverting as well as more substantial and valuable information regarding the old hostelries from Maine to Georgia and from the Atlantic seaboard as far inland as Kentucky, Missouri and Indiana, while one establishment as far west as Kansas is included. The majority of subjects, however, and those that have the most interest attaching to them, are to be found, as might be expected, in the Atlantic states. To anyone who has never looked into the matter at all carefully, it will probably be amazing to discover how many inns once flourished, how many still survive or have been reopened as tea rooms after a long period of disuse, and how illuminating is the body of material relating to them. A commendable feature of the book is the bibliography following the last chapter, which will be of considerable service to those wishing to pursue the subject in detail.

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It would be impossible to over-emphasize the value of this work to anyone interested in its subject.

223 pages. 9¾ x 12¾ inches. Price $5.

ROGERS & MANSON COMPANY
383 MADISON AVENUE, NEW YORK

THE SMALLER AMERICAN HOUSE. By Ethel B. Power. 100 pp., 8½ x 11 ins. Price $3 Net. Little, Brown & Co., Boston.

MISS POWER'S book, "The Smaller American House," is an exceedingly valuable addition to that body of "small house" literature which commands a perennial and increasing interest. The architect, of course, is always ready to peruse a volume of this sort, if for no other reason, at least to satisfy a pardonable curiosity respecting what his brothers in the profession are doing or have done. Moreover, he is very much alive to the possible suggestive import of such a collection of material. In this expectation the book before us will not disappoint him. It is to the layman, however, that "The Smaller American House" is more particularly addressed. His interest is by no means casual or impelled by a passing admiration for what pleases the eye. On the contrary, what he gathers from a close study of the plans, elevations and perspectives of small houses is fraught with an intensely direct and personal appeal. He is on the lookout to discover in each illustration examined what he may adapt to his own immediate needs. He is becoming an exacting critic of domestic architecture.

The notices of new books printed on the paper jackets enclosing them are invariably laudatory and often misleading. In this case, however, the jacket notice is well within the limits of truth in its statement of the value attaching to the contents. "The purpose of the book," we are told, "is to help those about to build and those who, even though their hopes of building have as yet no foundation, want to crystallize their ideas by studying recent examples of the best in small house architecture." The promises put forth on its behalf are fully justified by the performance of the volume. Every one of the 55 houses presented in the 237 illustrations has distinct merit of one sort or another and deserves all the attention accorded it. These houses were all chosen with three factors in mind,—the recent dates of their building, their cheapness or moderate cost, and their architectural worth. In cost the majority of them ranged from $18,000 to $25,000. Picked without reference to style or material, except with a view to securing sufficient variety, and selected without particular regard to locality, as a matter of actual fact the dwellings shown represent much of the best small house architecture throughout the country and cover a wide range of types that have come to be characteristic of regional methods. The houses are grouped according to the materials of which they are built and are thus classified: wood, stucco, brick and stone. While this classification altogether ignores geographical bonds, it gains in additional convenience for purposes of comparison. With the exception of a brief foreword, the text is confined to fully informative captions or paragraphs attached to the half-tone illustrations and plans. As Miss Power says of these captions, in her foreword, they "make no attempt to appraise the houses described. They merely add those facts that the camera could not portray, but which seem necessary in order to complete the picture." Thanks to carefully chosen illustrations which, along with the plans, give the principal facts in each case, the houses speak for themselves and often in a way more direct than could be done by written criticism.

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of composition. While a few betray classic affinities and derivations more or less pronounced, the romantic types exhibit a rich variety of provenance. Some are plainly inspired by early American precedents that prevailed before the classic influence made itself appreciably felt in architecture, some are clearly reminiscent of French provincial manners or traditional British prototypes, and the Spanish strain is evident in more than one dwelling built to meet the conditions of California climate and environment. Not a few, however, display a blending of traditional precedents from varied sources and happily conceived as well as highly individual interpretations. It is this departure from historical conventions and this spontaneous freedom of adaptation that afford the chief interest attaching to a fair proportion of the houses illustrated. Albeit there is plenty of flexibility and freedom of adaptation, there is none of that radicalism that strains for originality by treating all precedent with contempt.

ART THROUGH THE AGES; AN INTRODUCTION TO ITS HISTORY AND SIGNIFICANCE. By Helen Gardner. 506 pp., 5¾ x 8 ins. Price $4. Harcourt, Brace & Co., New York.

FOR the instruction of the general public in the history and meaning of art in its many forms there is no lack of excellent handbooks dealing with the subject. Such volumes are likely to be particularly useful when their preparation has been the result of actual teaching, since teaching gives a writer, as nothing else can do, an insight into what the student most needs and knowledge as to how to present subject matter to render it most readily understood and applied. The author of this excellent work approaches its writing with the experience given by years of instruction in the history of art at the Art Institute, Chicago, and the volume is in fact a development of the courses on the subject given there. Each era is regarded and studied as a unit of culture. A brief historical survey suggests the most important conditions that have influenced art,—geography, climate, nature of materials, social, economic and political conditions, and religious beliefs. After this introduction there are a discussion and analysis of a few typical examples of each of the major arts, and in many instances of the lesser arts as well. A summary then presents the æsthetic significance of the period when viewed as a whole.

The claim of architecture to a place among the major arts is of course fully acknowledged in this volume. As that art among all the arts which perhaps most closely touches the individual and as the most direct expression of the artistic impulses of any age, it is given ample and adequate treatment. The author surveys, in fact, the architecture of all the centuries and the different countries, and dwells upon the history, development and achievements of each, illustrating all this (with over 800 illustrations) in a way likely to interest the student of architecture as well as the individual concerned merely with a general survey of the entire subject of art. At the end of the work there is given an extensive bibliography as well as a glossary of terms with which the student must be familiar in order to profit by writings on any subject connected with the arts or their application.

A Notable Work on English Architecture

THE most popular and widely used type of architecture in vogue in America today is unquestionably that version of the English Renaissance used during the reigns of George II and George III—or rather the American adaptation of the current English style which is now known as "late Colonial." A correct understanding of the Colonial of this period is best had by studying the prototype from which it was evolved, the work of the great English architects who formulated the style which has ever since been representative of England's best. Mr. H. Avray Tipping gives a lucid and comprehensive history of the work of many famous architects of that time, among them the Adam brothers, who stand out prominently. They were the first to differ from the Palladian pedants and Rococo designers, and the architectural development of the Adam brothers had a profound effect.

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ENGLISH HOMES; PERIOD VI—VOLUME I

Late Georgian, 1760-1820 *By H. Avray Tipping, M. A., F. S. A.* 402 pp., 10½ x 15¼ ins. Lavishly Illustrated. Price $25

ROGERS & MANSON COMPANY, 383 MADISON AVENUE, NEW YORK

THE EDITOR'S FORUM

AN INTERNATIONAL CONGRESS

AT a recent meeting in Paris of the permanent committee of the International Congress of Architects it was decided to hold the 11th International Congress in Amsterdam and The Hague from August 29 to September 4, 1927. This will be the first really International Congress of Architects held since the war. The 10th Congress, held in Brussels in 1922, although international in theory, was attended only by architects representing the allied and friendly powers, but to the coming Congress Germany and Austria and in fact all of the countries of the world are cordially invited. It is fitting that such a meeting should be held in a neutral country such as Holland. The architects of the Netherlands have long desired this meeting and are exerting every effort to make it a notable gathering and one of value. Five of the subjects to be discussed are: International Competitions; Legal Protection of the Title of Architect; Architectural Copyright; Architecture as Practiced by the Architect and by the Architect-Builder; Artistic Development of Architecture Since 1900. A detailed program will be published by the American Committee later.

The International Congress of Architects was organized in Paris in 1867, where the first three meetings were held. The fourth was held in Brussels in 1897, the fifth in Paris in 1900, the sixth in 1904 in Madrid, the seventh in London in 1906, the eighth in Vienna in 1908, the ninth in Rome in 1911, and the tenth in Brussels in 1922. These great international gatherings have brought together architects from all parts of the world to discuss matters of importance to the entire profession. Each has lasted from a week to ten days and, although not unlike conventions of the American Institute of Architects, they are naturally on a much larger scale and, being in countries of great architectural interest, the visits and excursions to architectural monuments and the brilliant receptions and entertainments offered by the various governments—for these Congresses are always under the auspices of the countries in which they are held—make these gatherings of interest to all who are able to attend. These meetings are truly inspiring, and all American architects are urged to attend the coming Congress. The American Committee, International Congress of Architects, includes Cass Gilbert, Chairman; William A. Boring, Glenn Brown, J. Monroe Hewlett, William Rutherford Mead, C. Howard Walker, C. C. Zantzinger and George Oakley Totten, Jr., Secretary. American architects who find themselves able to attend the Congress are asked to communicate as soon as possible with the Secretary at headquarters, 808 Seventeenth Street, N.W., Washington.

CHICAGO TRIBUNE COMPETITION

UPON this page of THE FORUM for November, 1926 there were outlined the details of a competition for designs and plans of small suburban houses, the competition instituted by *The Chicago Tribune*. The prize-winning designs and plans, together with those of quite a number of the best which failed to win prizes, are now published in book form, the volume forming a valuable evidence of the wide interest being taken in the small house. The winners of prizes for designs and plans of five-room houses are: (1) William J. O'Connor; (2) George D. Conner; (3) H. Roy Kelley; (4) Hillard Russell; (5) John Paul Turner; (6) Anthony Wuchterl; (7) Clarence W. Hunt; (8) Russell E. and E. Wayne Yates; (9) Angus McD. McSweeney. For designs and plans of six-room houses prizes were awarded to: (1) Richard E. Bishop; (2) Amedeo Leone; (3) Louis C. Rosenberg and G. Dewey Swan; (4) Pierre & Wright; (5) H. R. Bishop; (6) Constantin Alexandre Pertzoff: (7) William P. Hellen and Burwell F. Hamrick; (8) Edward D. James and J. D. Small; (9) W. F. Mullay.

A WORK ON CHURCH SCHOOLS

THE Bureau of Architecture of the Methodist Episcopal Church, 1701 Arch Street, Philadelphia, and 740 Rush Street, Chicago, has issued a 24-page booklet describing the departmentalization plans now regarded as necessary to any successful program of religious training. The booklet, which sells for 50 cents, contains cuts illustrating department and class rooms, and it also gives the plans.

RESEARCH IN CONCRETE

HOW heat and weather affect concrete will be more accurately known upon the conclusion of tests now in progress at the College of Engineering of the University of Wisconsin. One series of experiments directed by Professor E. R. Maurer is designed to find how the high temperatures of the interiors of reinforced concrete chimneys affect the stress in the reinforcing steel. Concrete cylinders are being tested under high internal temperature conditions to obtain data. Professor Maurer is being assisted by C. N. Neumeister, instructor in mechanics. The investigation was suggested by a committee of the American Concrete Institute. C. A. Wiepking is conducting a second group of tests which are to extend over a period of 100 years. He has made some 3,000 concrete and mortar specimens which are to be tested after exposure to the weather for different periods, ranging up to 100 years. In some of the specimens the aggregate has included sand and gravels from deposits in southern Wisconsin regions.

20 important new office buildings open in New York district

Read this interesting table of facts about 16 of them

BUILDING	ARCHITECT	CONTRACTOR	PARTITION
Bryant Park	York & Sawyer	C. T. Wills Inc.	Telesco
Fred. F. French	Fred F. French Co.	Fred. F. French Co.	Telesco
Architects'	Ewing & Allen	Post & McCord	Telesco
Hale	Jardine Hill & Murdock	Fred T. Ley Co.	Telesco
6th Ave. & 31st St. Corp.	Gronenberg & Leuchtag	Lanbaer Const. Corp.	Telesco
271 Madison Ave.	Buchman & Kahn	Percy Uris	Telesco
424 Madison Ave.	Buchman & Kahn	Kidansky & Levy	Telesco
Corn Exchange Bank	Building—Cross & Cross Bank—Fellheimer & Wagner	Cauldwell-Wingate Co.	Telesco
50 Broadway	H. Craige Severence	Chas. L. Fraser	Telesco
60 Broad Street	Buchman & Kahn	Percy Uris	Telesco
Park Murray	Buchman & Kahn	Cauldwell-Wingate Co.	Telesco
2 Court Square	Buchman & Kahn	Percy Uris	Telesco
Court-Livingston	A. J. Samberg	Adelman Bros.	Telesco
Court Montague	H. Craige Severence	Irving Feldman	Telesco
General Motors	Shreve & Lamb	G. Richard Davis & Co., Inc.	Telesco
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The ARCHITECTURAL FORUM

VOLUME XLVII — *Established 1892* — NUMBER 1

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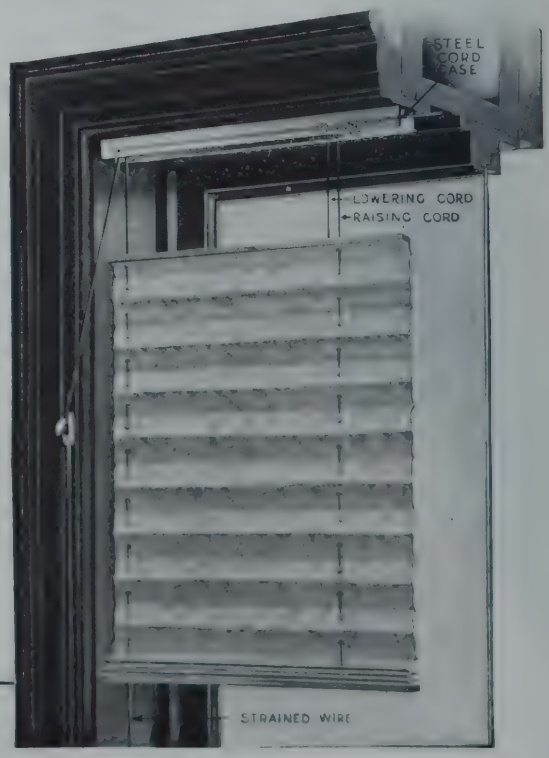

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DOMED CHURCH AT ATZCAPOTZALCO

From a Drawing by William P. Spratling

The
ARCHITECTURAL
FORUM

Volume XLVII JULY 1927 Number 1

Some Impressions of Mexico; Part I

By WILLIAM P. SPRATLING
Illustrated with Sketches by the Author

CLOUDS separate Cuernavaca from Mexico City. The same holds true of the trips out of the valley of Mexico to the many other *pueblos* (the small villages) and to the churches and convents with which this strange countryside is so richly scattered. These remains of Spanish Colonial work in Old Mexico are likely to more closely reflect the nature of the Indian builders and their own feeling in their handiwork than are the European importations of Castilian and Iberian structural ideas. This is a reassuring thought, and we connect it with the enduring qualities of the indigenous race. As a people, the Indians reveal a most amazingly fertile sense of form and color and show a vigorous impulse in all their forms of art expression. As a matter of fact, Mexico is just now by way of coming into her own artistically, with Diego Rivera and others to lead the way into a new sort of Renaissance. This seems to concern itself with purging the country of the taint of foreign productions and with the serious encouragement of the "very real and personal art of the Mexican peasant," to quote Senor Rivera.

Fernando Cortez, when he entered this gorgeous country in the year 1521, seems to have entertained no doubts at all as to its possibilities. Possibly it was purely the driving force of the *conquistadores* and the exhilaration of their terrific and bloody victories over the Aztecs that produced what must have been a tremendous impetus and zeal in setting about building. More likely there is something in the marvelous climate and the very nature of this almost exciting country that fired the enthusiasm and imagination of the invaders. They brought in their train Franciscan friars and the art of building masonry structures; and along with that the impulse and ideas of the Renaissance, which had just begun in Spain, —and also a few relics of the Gothic. What really happened in actual construction was that these European patterns, turned over to native craftsmen, received from their hands in the putting together of the parts the spirit of the Indians,—*los Indios,*—a quality very rich in beauty, a little savage, and even in some instances bearing the unmistakable outward symbolism developed by this deeply mysterious race.

There are domes in Spain, but with the Mexican domes it is difficult to resist the thought that here there is something new, something closer to the earth, something that was created out of a passion that was more personal. It may be that a little of the quality of the unending rhythm of the eternal mountains of Mexico has found its way into the concrete expression of these lovely structures. Strange if it did not! Domes in Mexico are a constant delight. Not only in the varied forms and the groupings of these forms,—of all sizes and shapes,—but in their primitive adornment with tiles, which convert their breast-like bubbles into a sort of jeweled ware of rare enamels; they glisten in the sun. According to my friend, Dr. Atl, the Mexican authority on the architecture and other popular arts of that country, there exist something like over 4,000 domed structures in the republic which are of antique origin. This is not hard to believe when one has with one's own eyes viewed Cholula, a little city about ten miles distant from Puebla, with a population of about 1500 and which possesses no less than 365 churches. That allows one for every day in the year! Form and detail that are Baroque and Churrigueresque are there in abundance and exhibiting a joy or liveliness coupled with a curiously naïve and primitive quality that is unique. It is certain that exactly the same purity and simplicity of primitive art cannot be identified in any of the early work of either Italy or Spain as those countries exist today.

At Guadalupe we have another and almost Italian Fiesole. Actually it is not at all Italian, this little town that is the religious shrine of all Mexico. The thing that brings Fiesole to mind is probably the abrupt little hill, just at the rear of the shrine itself, threaded with pink and blue walled precipitous cobbled alleyways and crowned with a chapel of a blue which almost matches that of the sky above. From the tortuously achieved height the curious little village falls away at one's feet, with red-tiled roofs turned upward and with back yards containing brown Indian children and squealing pigs. At the base of this hill is the gorgeous jewel of Churrigueresque which was built over the sacred well. The delicacy of detail in this quite perfect thing is so lovely as to remind one of nothing so much as of old Italian jewelry. The brilliant and zestful colors of the dome itself, which is covered with *Talavera-de-Puebla* tiles

A SMALL COURTYARD IN THE CONVENT, CHURUBUSCO

DOMES OF CATHEDRAL FROM BELL TOWER, PUEBLA

FRANCISCAN MONASTERY, CUERNAVACA

CHURCH OVER THE SACRED WELL, GUADALUPE

DOMES OF "DEL CARMEN," SAN ANGEL

PATIO, CHURCH AT XOCHIMILCO

of dark blue, yellow and white, make it seem almost unreal after the pale and essentially discreet architecture to which we of the north are accustomed.

Xochimilco would fill every conception of a savage and flower-laden Venice. This delightful place is within half an hour of the city, and the Indians here are living as they have always lived on the "floating islands" and cypress-lined lagoons of this beautiful section. The church here is quite primitive and at the same time exotic in a manner imposed by the vegetation and the surrounding flow of simple, colorful life. At Xochimilco one buys flowers,—masses of tube roses or strangely colored carnations,—from gently bargaining Indian girls for 10 or 20 *centavos*. For primitive and really Mexican frescoes, see Atzcapotzalco. Senor Rivera showed me Atzcapotzalco, with the big, simply painted figures under the dome done in naïve and earthy colors. The work of these painters was, as Rivera pointed out, "always of simple and therefore infinite craftsmanship"; and the buildings bear the stamp of the same character in the manner in which they are detailed and in the way in which they invariably confess their construction, disdaining any attempt at pretense.

It is a pity that there are a number of very thoroughly done and beautifully printed books in Mexico on some of these very things which, for the reason that they are not translated or exported, are inaccessible to the American public. I am thinking in particular of the wonderfully complete *"Las Iglesias y Conventos Mexicanos,"* of Dr. Atl's, of Jorge Enciso's "Churubusco," and then, in connection with Tepotzotlan, of the very comprehensive and well illustrated study by Rafael Heliodoro Valle on that convent. This convent of Tepotzotlan dates from about the middle of the sixteenth century and contains what is probably the most interesting grouping of exterior parts and gorgeous accumulation of interior detail of any example that I discovered. In this curious and rich combination of primitive, Moorish and Churrigueresque buildings,—with some Gothic ideas,—set some 36 kilometers away from the city and outside the mountain chain that girdles the valley of Mexico, I had the feeling that surely here was something that was greater than any incidental European imitation that the country might contain. Possibly it might even be classed as the republic's greatest monument of her colonial period, for that particular reason. It is a work of surpassing interest.

The convent of Churubusco is a low-lying pile just off the road that leads to Cuernavaca. Within a two hours' jaunt beyond there is Coyoacan and the beautiful group of colorful small domes that is the *Convento del Carmen* at San Angel. Within the convent of Churubusco is found, besides the old furniture and rare objects, a busy school of painting. This charming place, small in all its parts, full of interestingly shaped passageways, winding stairways, and curiously domed, is one of the earliest of the convents. When seen from the top of the vaulted roof or from the belfry it appears to be very extensive and is filled with numerous small courtyards. This is another building in which native form has manifested itself in spite of the imposition of foreign forms. Coyoacan, where I went to see the *Casa Alvarado*, is a sort of residential suburb that has much dignity, is full of reserved-appearing house fronts, and has streets which seem very sophisticated with their high shade trees and asphalt paving. A little beyond, on the way to San Angel, I found the *Casa Alvarado*, which was built in the early years of the conquest by Cortez' trusted lieutenant, Pedro Alvarado, and is now owned and lived in by Mrs. Zelia Nuttall, the celebrated archæologist. This is undoubtedly one of the finest of the early residential buildings, and it has a splendid court and garden. A visit here recalls impressions from D. H. Lawrence's novel, "The Plumed Serpent." The exterior walls are done with an all-over pattern of strapwork that possesses a decidedly Moorish or *Mudejar* flavor.

The present administration has done some very excellent work in establishing a commission for the preservation of old buildings. The jurisdiction of this commission, of which Senor Jorge Encisco is director, is absolute and seems to cover every fragment of architecture worth preserving. A photographic record (which I had the pleasure of going through at leisure) is kept, and no alterations or repairs to buildings may be effected anywhere without not only the approval but also the constant coöperation of this department. It seemed to me a very admirable thing. Moreover I was told that the government encourages the proper designing of buildings and the consistent employment of traditional material by allowing new buildings that meet the commission's requirements to be tax-free for a period of ten years. And there are remodeled buildings in Mexico City,—old palaces that date back to the days of the conquest, adapted for department stores, and some with two or three stories added that have been done so well that it is impossible to tell the new work from the old and that still remain splendid examples of the Spanish Colonial. There are American cities that could learn much from Mexico in these matters. Where I live, in the old quarter in New Orleans, there has always been the question of preserving the traditional French and Spanish work from demolition by commercial demands, and it appears that mayors' committees, appointed periodically, accomplish very little, and that eventually the individual property owner comes out supreme in any controversy with a committee.

Few places in Mexico are being ruined or even seriously injured by modern improvement. The march of progress is not rapid, and even the political upheavals in one form or another which afflict Mexico, just as they do all lands Latin or largely Latin, work but little injury to the architecture of the country. Perhaps the beneficence of nature, responsible for so much of Mexico's wealth in many forms, removes or at least conceals the few wounds which scar the face of the country or mar its loveliness.

SOUTHEAST ELEVATION, FLETCHER HALL

Plans on Back

COLONNADE, FLETCHER HALL

SWEET BRIAR COLLEGE, VIRGINIA

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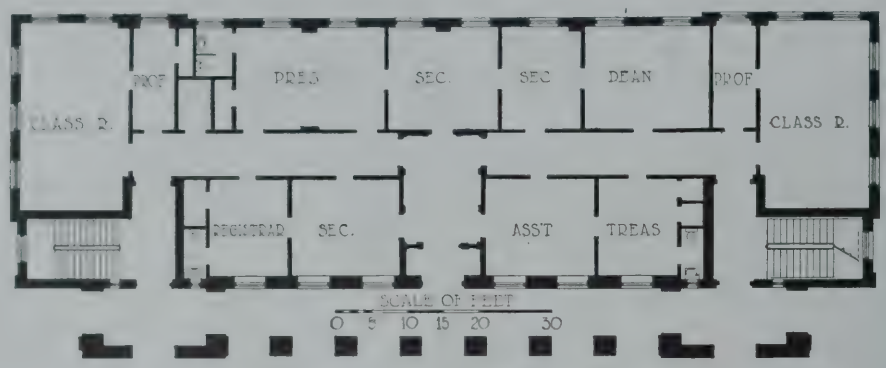


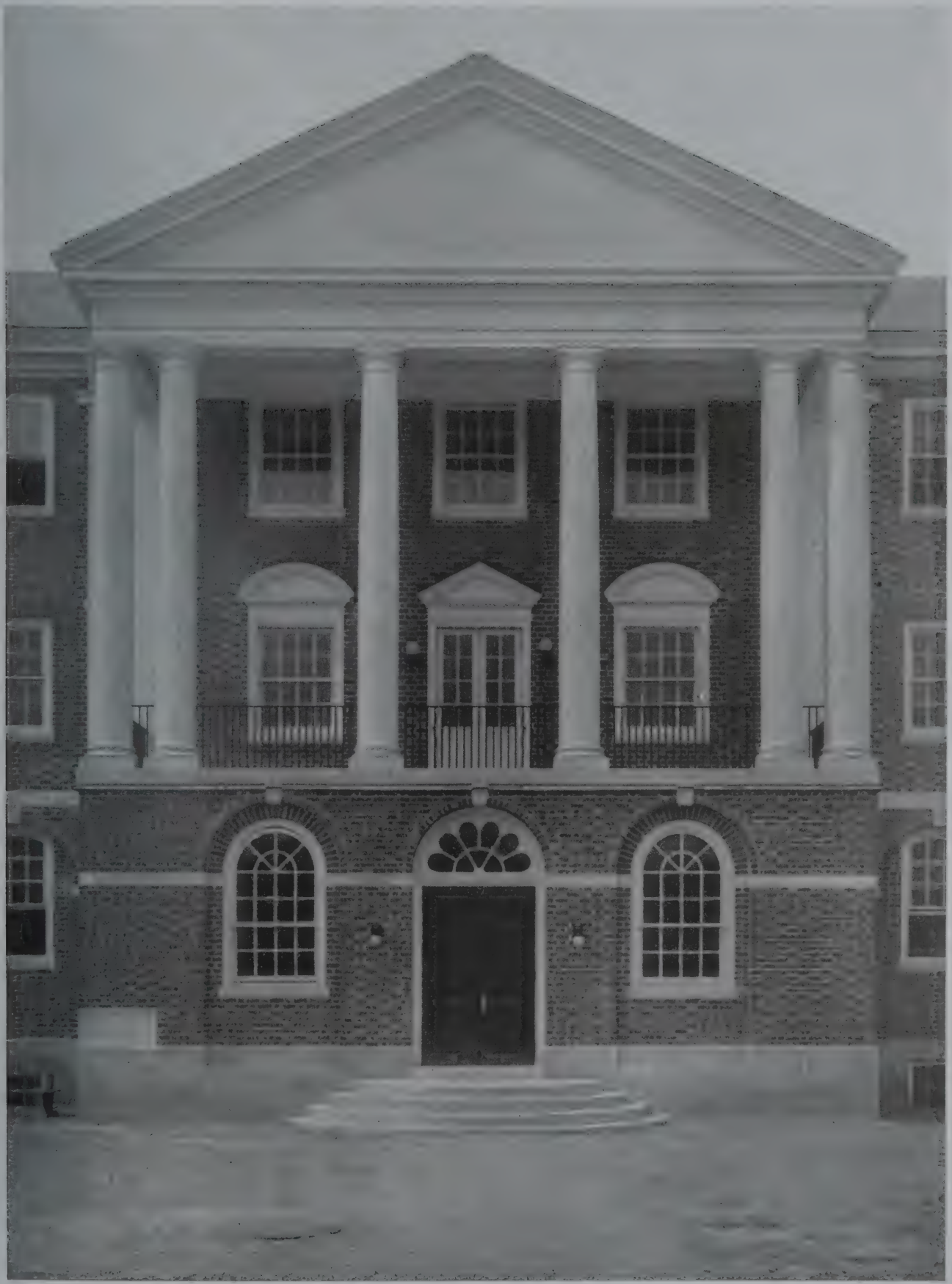
MAIN FLOOR

GROUND FLOOR

PLANS, FLETCHER HALL, SWEET BRIAR COLLEGE, VIRGINIA

CRAM & FERGUSON, ARCHITECTS; CLARK & CROWE, ASSOCIATED

DETAIL, INFIRMARY
SWEET BRIAR COLLEGE, VIRGINIA
CLARK & CROWE, ARCHITECTS



DETAIL, REID DORMITORY
SWEET BRIAR COLLEGE, VIRGINIA
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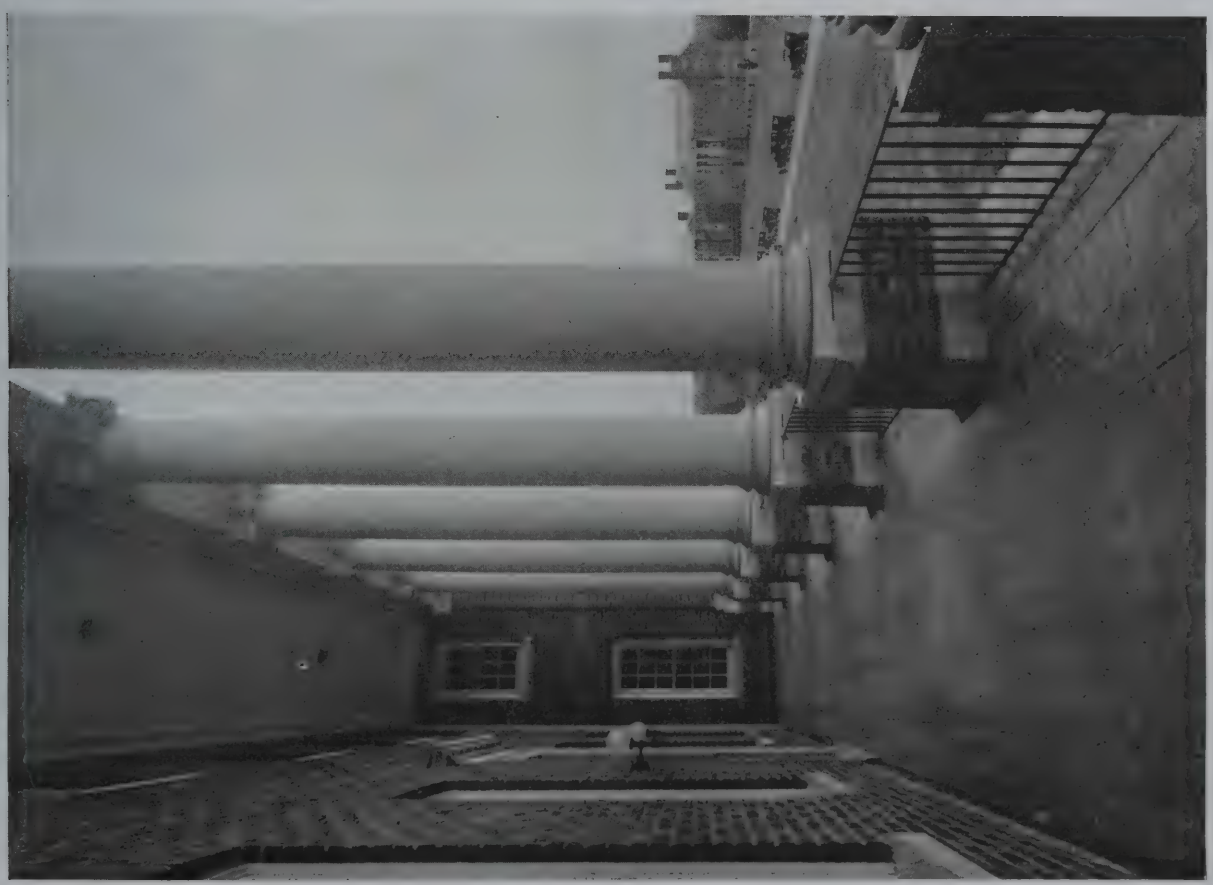
DETAIL, INFIRMARY
CLARK & CROWE, ARCHITECTS



COLONNADE, FLETCHER HALL
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SWEET BRIAR COLLEGE, VIRGINIA

ARCADE CONNECTING DORMITORIES

SWEET BRIAR COLLEGE, VIRGINIA

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DETAIL, FLETCHER HALL

SOUTH ELEVATION, FLETCHER HALL
SWEET BRIAR COLLEGE, VIRGINIA
CRAM & FERGUSON, ARCHITECTS; CLARK & CROWE, ASSOCIATED

INTERIOR DETAIL

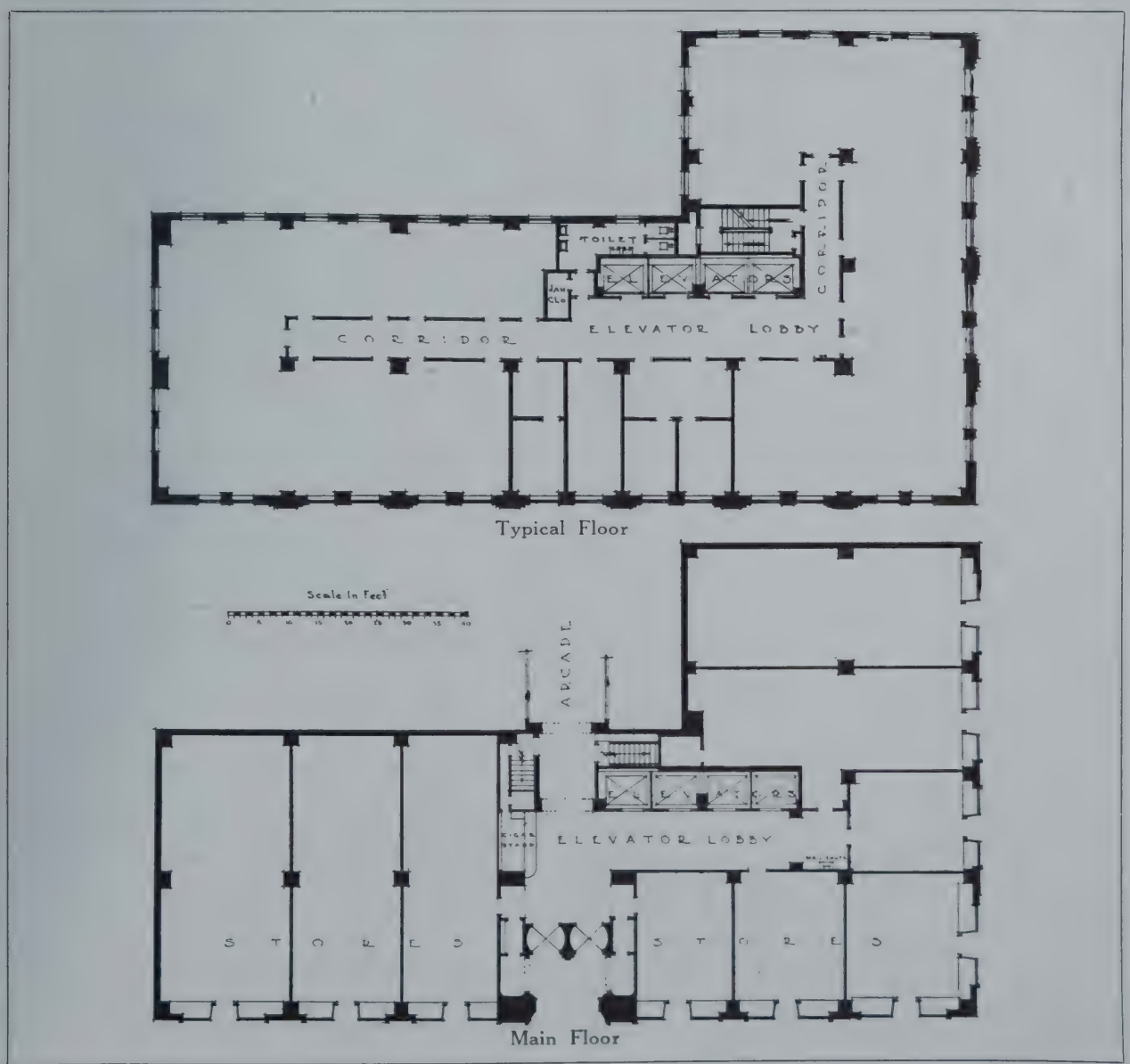
FLETCHER HALL, SWEET BRIAR COLLEGE, VIRGINIA

CRAM & FERGUSON, ARCHITECTS; CLARK & CROWE, ASSOCIATED

The Baker Building, Minneapolis

LARSON & McLAREN, Architects

THE new Baker Building, on the corner of Seventh Street and Second Avenue South, is the first unit of a development covering the entire city block. This great building when completed will include a central heating plant, a 400-car garage, and arcades with shops and stores running diagonally through the center of the block. The exterior of the Baker Building shows a pleasing adaptation of Italian Gothic details, combined with unbroken vertical piers which increase the apparent height of the structure. A large recessed arch forms the entrance to the main vestibule of the building, which again is ornamented with decorative detail suggestive of Florentine architecture. The several shop fronts which break the elevation of the building at the street level are so placed and spaced that the main piers of the design carry down to the base course of the structure. Sandstone with ornamental work in pulsichrome terra cotta, and marble and terra cotta for the spandrels are the materials used for the exterior. Terrazzo floors and walnut trim are used in the interior, with the exception of the entrance hall and elevator lobby, which are wainscoted in marble. Four large elevators accommodate the eleven floors of the building, which are divided into offices varying in sizes according to the requirements of the tenants. A special system of concealed ducts has been provided throughout the structure to take care of telephone, telegraph, time clock and intercommunicating telephone wires and other like utilities.



Plans, Baker Building, Minneapolis
Larson & McLaren, Architects

BAKER BUILDING, MINNEAPOLIS
LARSON & McLAREN, ARCHITECTS

LOBBY, BAKER BUILDING, MINNEAPOLIS
LARSON & McLAREN, ARCHITECTS

ENTRANCE, BAKER BUILDING, MINNEAPOLIS
LARSON & McLAREN, ARCHITECTS

The Forum Studies of European Precedents

A GROUP OF ITALIAN FOUNTAINS

FONTE GATTESCHI, PIAZZA FONTANA, VITERBO

THE ever-present fountain of the public square in each town and city in Italy is responsible for much of the charm and character of what might otherwise be a bleak or blazing space. The sparkle and life of the running water do more in refreshing the mind and spirit of tourist or townsman than either may consciously realize. Of course the origin of the fountains was primarily utilitarian, and in many cases they are still the sources of most of the domestic water. The second of these plates indicates this, though it does not show the colorful gatherings that come for gossip and news as well as to quench their thirst. These Viterbo fountains are typical of the town fountain, usually fairly simple and designed primarily as a water supply with many jets to fill the jugs and pitchers of the townsfolk.

The great bronze fountains of the Piazza before St. Peter's show their inestimable value as adjuncts to architecture. Imagine the waste expanse of this immense plaza without their life-giving relief. Bernini's colonnade is not sufficient; the fountains play a necessary part in producing the magnificent effect of this finest of approaches. The other illustrations show in some measure the relief afforded monumental architecture by the introduction of water features as integral, though minor, parts of the designs,—an aid too often neglected.

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Photos. Paul J. Weber

FOUNTAIN, PIAZZA DELLA MORTE, VITERBO

The Forum Studies of European Precedents; Plate 82

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FOUNTAIN, PIAZZA OF ST. PETER'S, ROME

The Forum Studies of European Precedents; Plate 83

© *The Architectural Forum*

DETAIL, FOUNTAIN, PIAZZA DEL POPOLO, ROME

The Forum Studies of European Precedents; Plate 84

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FOUNTAIN, PIAZZA DEL QUIRINALE, ROME

The Forum Studies of European Precedents; Plate 85

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DETAIL, FOUNTAIN, PIAZZA DEL QUIRINALE, ROME

The Forum Studies of European Precedents; Plate 86

© *The Architectural Forum*

FOUNTAIN, AQUA FELICE, ROME

The Forum Studies of European Precedents; Plate 87

© *The Architectural Forum*

DETAIL, FOUNTAIN, AQUA FELICE, ROME

The Forum Studies of European Precedents; Plate 88

Old English Inns; Part III

By CLINTON H. BLAKE, JR.

ONE of the most interesting and least changed of the old English inns is to be found at Chigwell. This is a delightful little village in itself, and its inn is quite in keeping with the general atmosphere of the place and its entire setting.

A fortuitous circumstance, which at the time seemed at first to be in the nature of a calamity, enabled me to approach the town by way of the highroad rather than by rail. A railway guard had misdirected me to such good purpose that I was deposited by the train at a spot some five miles distant. Here I succeeded in hiring a very ancient carriage drawn by an equally ancient horse driven by a truly Dickensean driver. In this conveyance we traveled across country to my destination. As we traveled on to Chigwell I quickly forgave the guard for his mistake. The country was charming, and the approach to the town between the English hedgerows and across the fresh fields was a far better introduction to its attractions than the more direct approach by steam and rail. My driver was well acquainted with the inn, and better acquainted yet, I suspect, with its excellent beverages. It was at the door of the bar, in any event, that he deposited me and made haste to enter with me to its welcome cheer.

For luncheon I was directed to the floor above. There I found the real glory of this old inn,—a truly splendid room, running the full depth of the house and making one feel immediately as if one had at a step crossed into the England of Elizabeth. Oak-beamed, oak-paneled, with the soft, rich coloring which only such oak paneling can give, the room was a pure delight. The original small-paned casement windows extended the width of either end. On the front they looked down upon the lazy village street. At the rear they overlooked the garden of the inn, with its invariable roses and other flowers and carefully tended bit of lawn. Along the walls were ranged a number of the carved oaken chairs which have served the inn for generations. They are no longer in very active use, but are carefully preserved in the room of which they have been so long a part. No other traveler was in sight, and there was ample opportunity to enjoy the beauty of the room at my leisure. This is in fact one of the chief charms of Chigwell. Few go there; it is quite unspoiled, and generally unknown to the "tourist," be he American or English.

The Hill, Chigwell

There are certain hours which each of us remembers as peculiarly restful and satisfying. To me one of these will always be the hour when I dined in this old room, at one of the sunny casement windows, with my host's excellent food and yet more excellent ale before me, and the English countryside and inn garden awaiting me below. Without my window swung the sign bearing an alleged likeness of King Charles I. Fully 50 per cent of English inns must bear the title of "The King's Head," and of these it seems to me that the vast majority have chosen the face of this unfortunate monarch to adorn their signs. The peculiar thing is that many of the inns which so honor him were in existence long before his birth. Why they should adopt his likeness with so much of unanimity is a question which it might be of interest to solve.

Charles Dickens has left a description of the "King's Head" which will be familiar to any reader of "Barnaby Rudge." In that story the inn is immortalized as "The Maypole," and the description there given applies almost in its entirety to the "King's Head" as it stands today. Dickens described the inn as "an old building, with more gable ends than a lazy man would care to count on a sunny day; huge zig-zag chimneys, out of which it seemed as though even smoke could not choose but come in more than naturally fantastic shapes, imparted to it in its tortuous progress; and vast stables, gloomy, ruinous, and empty. The place was said to have been built in the days of King Henry the Eighth; and there was a legend, not only that Queen Elizabeth had slept there one night while upon a hunting excursion, to wit, in a certain oak-paneled room with a deep bay window, but that next morning, while standing on a mounting block before the door, with one foot in the stirrup, the virgin monarch had then and there boxed and cuffed an unlucky page for some neglect of duty. Whether these, and many other stories of like nature, were true or untrue, 'The Maypole' was really an old house, a very old house, perhaps as old as it claimed to be, and perhaps older, which will sometimes happen with houses of an uncertain, as with ladies of a certain, age. Its windows were old diamond-paned lattices, its floors were sunken and uneven, its ceilings blackened by the hands of Time, and heavy with massive beams,"—all marks of age.

He remarked quite accurately that with "its

"The King's Head," Chigwell

overhanging stories, drowsy little panes of glass, and front bulging out and projecting over the pathway, the old house looked as if it were nodding in its sleep." Such was the house even in Dickens' day.

This is his description of its main room: "It was spacious enough in all conscience, occupying the whole depth of the house, and having at either end a great bay window, as large as many modern rooms; in which some few panes of stained glass emblazoned with fragments of armorial bearings, though cracked and patched and shattered, yet remained, attesting, by their presence, that the former

"The King's Head," Chigwell

Lantern Above Entrance

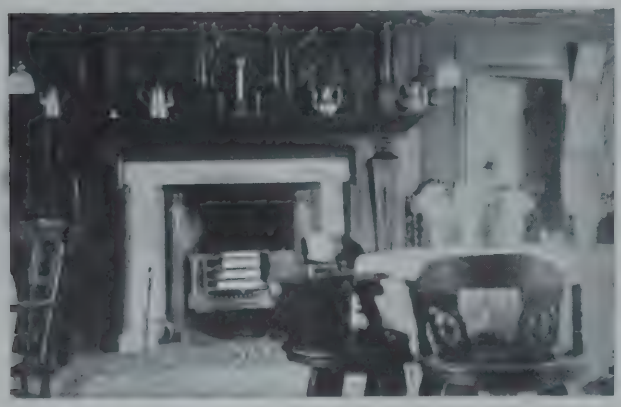
Village Street, Chigwell

owner had made the very light subservient to his state, and pressed the sun itself into his list of flatterers, bidding it, when it shone into his chamber, reflect the badges of his ancient family, and take new hues and colors from their pride and heraldry."

Dickens was no less enthusiastic over the town itself. A pamphlet on the "King's Head," distributed by the proprietors, quotes a letter from the novelist to his friend and biographer, John Forster, in which he urges Forster to join him at Chigwell. "Chigwell, my dear fellow, is the greatest place in the world. Name your day for going. Such a

Window, "The King's Head"

Entrance to Garden



Elizabethan Chimneypiece

Dining Room Window

delicious old inn, opposite the churchyard, such a lovely ride,—such beautiful forest scenery,—such an out-of-the-way, rural place,—such a sexton! I say again, name your day." And Forster promptly named it and doubtless he found Dickens' estimate correct.

The "King's Head" is limited in its bedroom accommodations. There is but one room which is really available at the present time,—the one which Queen Elizabeth is said to have occupied for a brief time.

A garden behind the inn is typical of those which one finds almost invariably in visiting these inns of England. Wall-enclosed, with many flowers, closely cropped grass and the usual arbor retreats, these old inn gardens offer to one a sense of quiet and restfulness which is quite irresistible in its appeal. A traveler can sense the England of other days far more accurately by a day spent in Chigwell and at one of her old landmarks, such as the "King's Head," than by a week of ordinary sightseeing. He will get the "feeling" of the life that was lived in the older England and, if I mistake not, he will be surprised to find how little of difference apparently there is between that life and the life which is lived today in any one of a score of these little rural towns.

It is this quality of revivifying the past that makes the old English inns so interesting. No matter how blatantly evident the present may be elsewhere, it is forgotten in favor of the olden days when we pass within their walls. They are enduring links between the England of today and the England of many yesterdays. Chigwell's is merely an excellent example of many inns linked equally with the past and preserving with equal fidelity its atmosphere. They are not too difficult to find, and the finding is well worth while. How long they will remain unspoiled, it is difficult to say. England is changing so rapidly, so many traditions are being shattered and new adjustments made, that it may well be that her ancient inns may not come through unscathed. Let us have faith, however, that they may do so, and long survive.

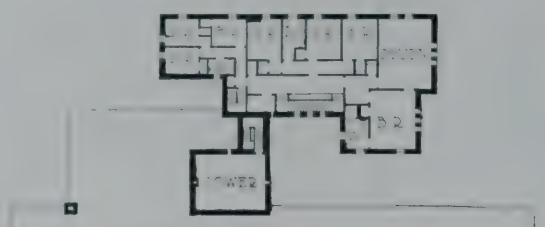
Garden, "The King's Head," Chigwell

Plans on Back

CHURCH OF THE HOLY INNOCENTS, BROOKLYN

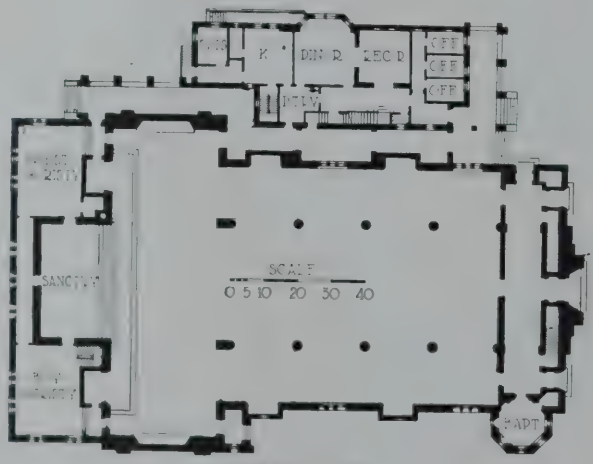
HELMLE & CORBETT, ARCHITECTS

Photos. Sigurd Fischer



THIRD FLOOR OF RECTORY

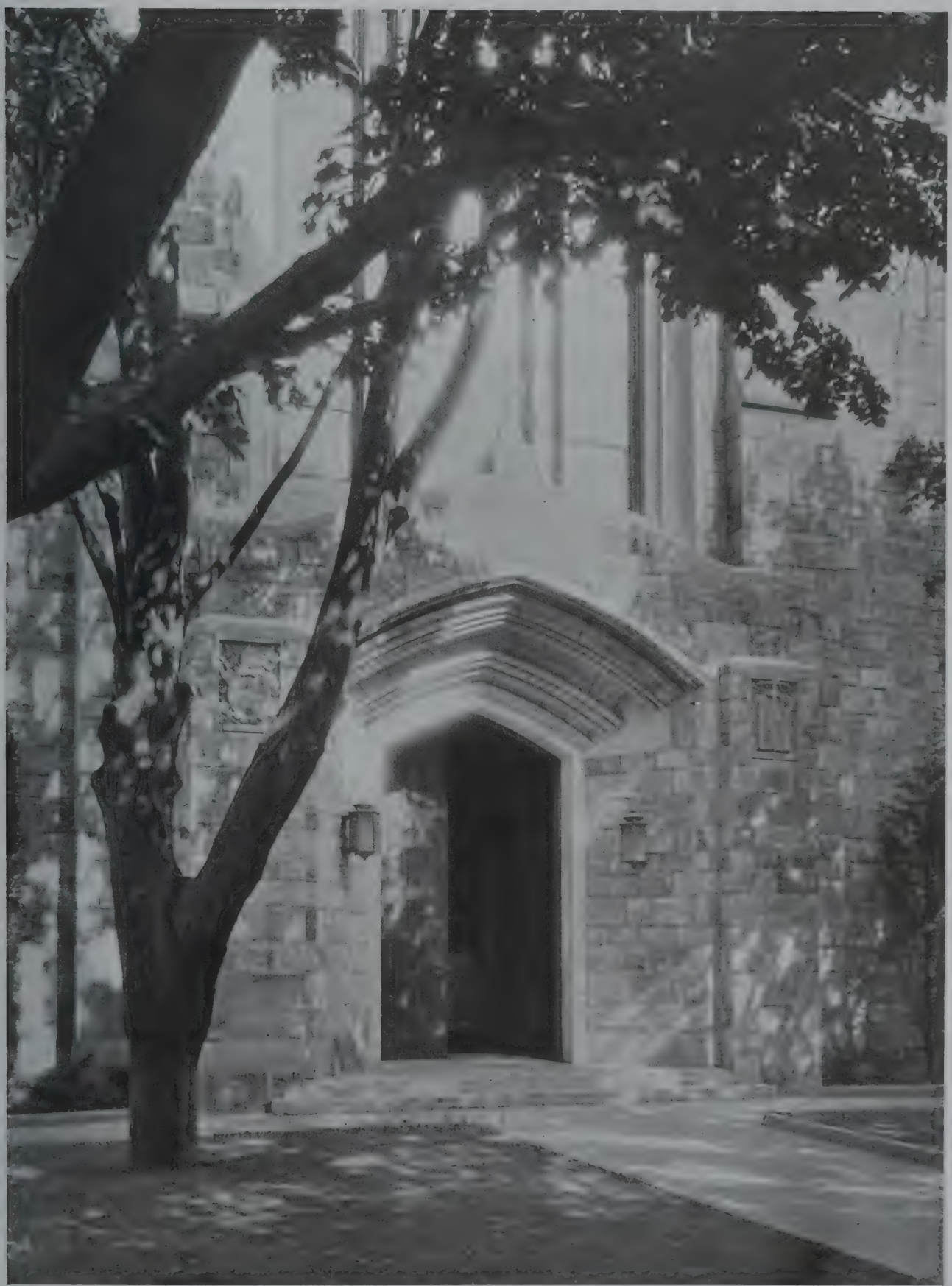
SECOND FLOOR OF RECTORY



FIRST FLOOR

PLANS, CHURCH OF THE HOLY INNOCENTS, BROOKLYN

HELMLE & CORBETT, ARCHITECTS



Details on Back

MAIN ENTRANCE

CHURCH OF THE HOLY INNOCENTS, BROOKLYN

HELMLE & CORBETT, ARCHITECTS

FRONT ELEVATION.
[EAST 17TH STREET]

REAR ELEVATION
[EAST 18TH STREET]

JULY
1927

No.
35

The ARCHITECTURAL FORUM DETAILS

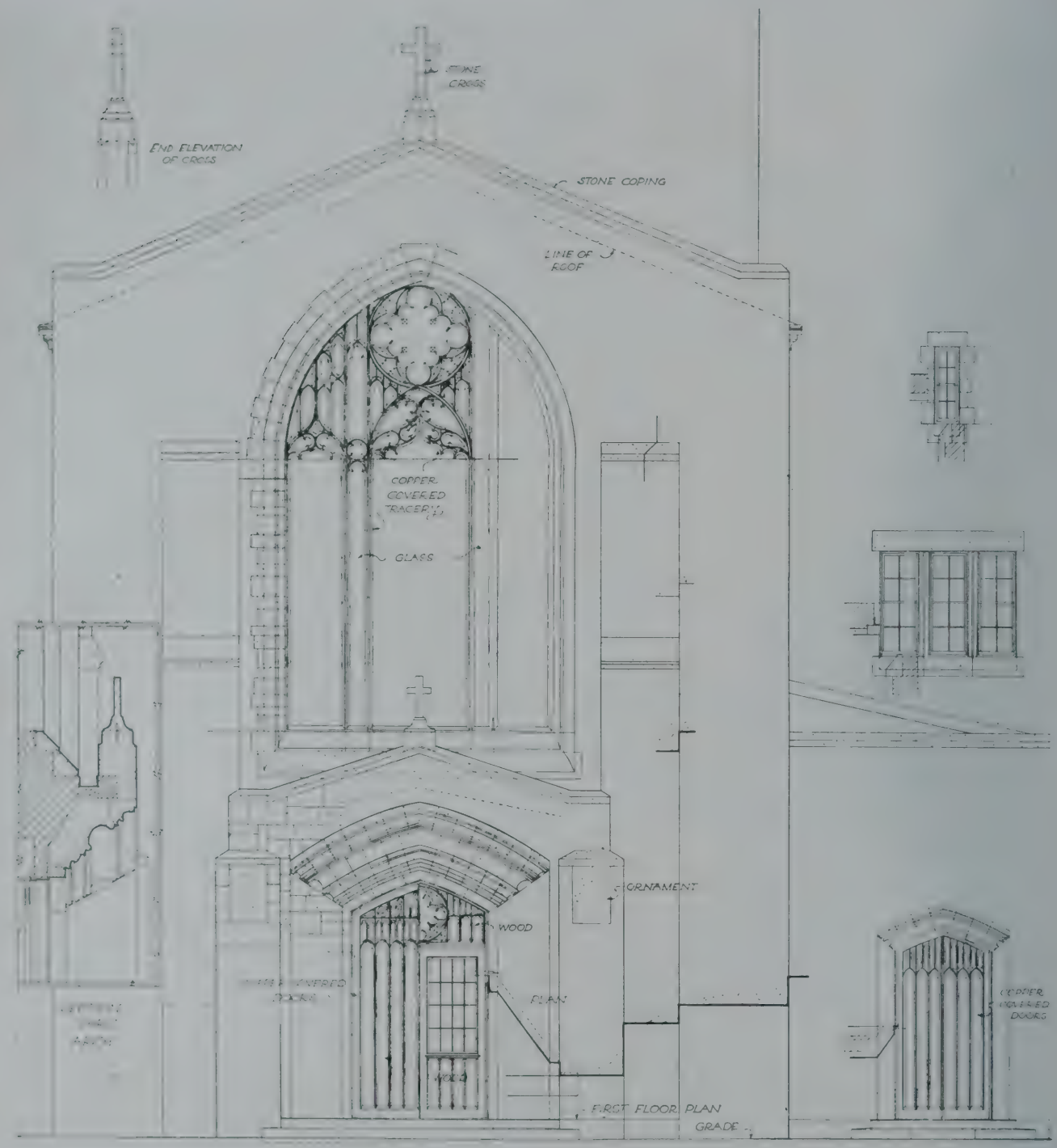
NORTH TRANSEPT
CHURCH OF THE HOLY INNOCENTS, BROOKLYN
HELMLE & CORBETT, ARCHITECTS

Details on Back

DETAIL OF CHURCH AND RECTORY

CHURCH OF THE HOLY INNOCENTS, BROOKLYN

HELMLE & CORBETT, ARCHITECTS



ELEVATION

ENTRANCE DETAIL

HOLY INNOCENTS CHURCH, BROOKLYN, NEW YORK.

HELME & CORBETT ARCHITECTS, NEW YORK CITY.

JULY 1927

SCALE 5 0 5 10 15 20 25 IN FEET.

NO. 36

VIEW OF NAVE
CHURCH OF THE HOLY INNOCENTS, BROOKLYN
HELMLE & CORBETT, ARCHITECTS

THE NAVE FROM THE NARTHEX

CONFESSIONAL AND STATIONS OF THE CROSS

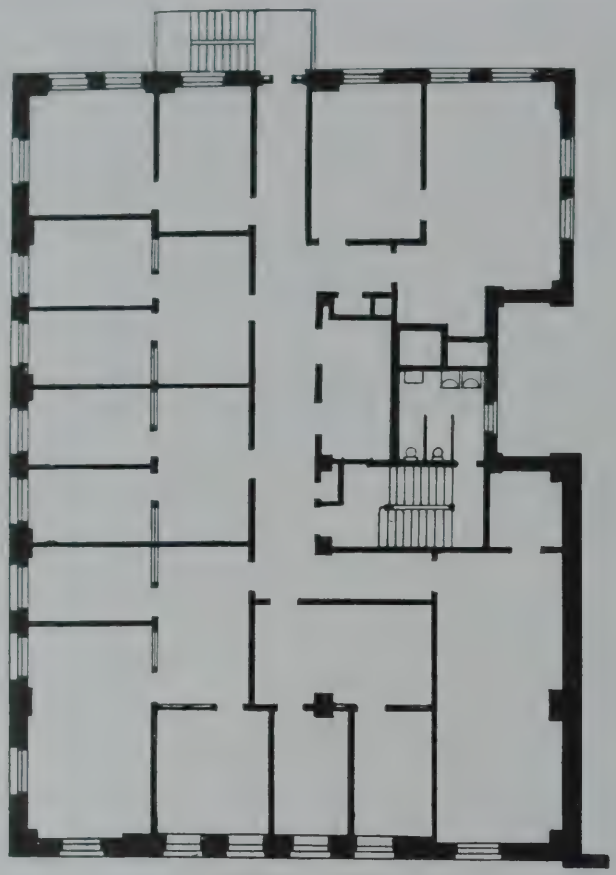
CHURCH OF THE HOLY INNOCENTS, BROOKLYN

HELMLE & CORBETT, ARCHITECTS

Photos. Trowbridge *Plans on Back*

DUNHAM BUILDING, CHICAGO

D. H. BURNHAM & CO., ARCHITECTS



SECOND FLOOR

FIRST FLOOR

PLANS, DUNHAM BUILDING, CHICAGO

D. H. BURNHAM & CO., ARCHITECTS

MAIN ENTRANCE
DUNHAM BUILDING, CHICAGO
D. H. BURNHAM & CO., ARCHITECTS

ENGINEERING DEPARTMENT

Deep Rock Foundations for an Immense Building

By FRANK W. SKINNER

WITH the exception of certain industrial and manufacturing structures and of massive public buildings, usually of moderate heights, nearly all of the most interesting and important substructures being built are for structures of the office building type that cover areas of from 10,000 to 100,000 square feet and have steel skeletons that rise from 100 to 500 feet above the streets. and sometimes extend as much as four stories below them. The tremendous loads, often amounting to more than 1,000,000 pounds each, on the bases of the steel columns demand the most absolute permanence and stability for their supports, while the walls and floors below the street levels are often subjected to heavy earth and water pressures that necessitate difficult and costly features of design and construction. Obviously these buildings are located only in large cities, where the sites cannot be selected with reference to foundation conditions or requirements. A very large proportion of them are located on the wet or loose soils so often found on the banks of lakes, rivers and bays, and they present great difficulties to construction and render building extremely costly.

There are essentially only three main types of foundations,—(1) those spread over a wide area of soil near the surface; (2) those carried down deeper to hard strata underlying softer material; and (3) those supported on piles or their equivalent. A striking example of the first class was the massive spread foundation for the New York County Court House, illustrated in THE ARCHITECTURAL FORUM for April, 1923. An unusually interesting example of the second class was that of the *New York Evening Post* Building, which illustrated advanced practice in pneumatic caisson work. Other very difficult and costly work was done on the $2,000,000 foundations of the New York Telephone Building, where an entire city block was enclosed by a sectional pneumatic caisson wall sunk through quicksand to rock or hardpan to protect and facilitate the entire

Earth and Rock Excavation; New York Life Building

Cass Gilbert, Architect

Workmen's Stairway; New York Life Building
Cass Gilbert, Architect

cellar excavation and that for the numerous still deeper column foundations that were easily laid within the limits of the enormous cofferdam that is embodied in the permanent construction of the building.

The numerous foundations for the scores of heavily loaded columns in the lofty Municipal Building in New York were made partly by the pneumatic caisson process, carrying them down to solid rock or hardpan, and partly by the same process terminating far above the hard stratum and providing extended bearings in the quicksand itself. With many examples of such difficult and costly work, often involving complicated operations and elaborate construction equipment, it is found that there are very few instances where foundations can be placed directly upon the living rock at subgrade of a building. This, however, is the case for the latest and one of the largest and tallest office buildings in the world, where costly foundation work of great magnitude and simplicity has been executed with remarkable efficiency and rapidity by the coördination of rational methods with an unusually large installation of standard power apparatus, which is chiefly electrical.

In the very heart of the metropolitan district of New York, on the full city block bounded by 26th and 27th Streets and by Fourth and Madison Avenues, where many years ago was the first passenger railroad terminal of the city, and later Barnum's Hippodrome, and where still later the famous Madison Square Garden, surmounted for 35 years by the exquisite figure of Diana, provided for a brilliant succession of social, artistic and political gatherings and for almost every kind of metropolitan function for more than one generation, there will soon appear the new office building of the New York Life Insurance Company, Cass Gilbert, architect, and Starrett Brothers, general contractors. This great structure, covering an area of about 83,000 square feet, will extend four stories below street level to a depth of about 72 feet, although the column piers will go still

Removing Old Foundations; New York Life Building
Cass Gilbert, Architect

lower to clear the cellar floor. How high the superstructure will tower above the busy streets and the little square adjacent; just how many tons of steel the lofty framework will contain; what will be the weight of the vast fabric and its contents; what the final cost will be, cannot be exactly determined until after the completion of the architect's plans; the latest estimate was of a height of 45 stories and a cost of $35,000,000. Whether or not these figures are correct, the main features of the substructure have been decided upon, and the great excavation, which alone is the subject of these pages, has been completed at a cost of approximately $1,000,000.

About a year ago the contract was awarded for about 150,000 cubic yards of excavation, and long before the demolition of the old building was completed three powerful steam shovels, entering at the street level, had begun the steady removal of some 23,000 cubic yards of broken stone, brick and concrete masonry, foundations, debris, and earth overlying the approximately horizontal surface of rock 15 or 20 feet below the curb. The shovels worked steadily back and forth across the 200 by 425 foot area, gradually descending as they constantly loaded 1-yard masses of earth and concrete to a great number of 5-ton trucks that formed a continuous procession, stopping momentarily by the shovels to receive their loads, and then passing rapidly on and up steeper and steeper inclines that their powerful gearings easily negotiated under the heaviest loads, and then into the street. They were carefully routed so as to avoid interference with one another or obstruction by traffic on their way to one or another of the different docks on the shores of the East and North Rivers, within a radius of about two miles. Here they discharged to large scows that were towed many miles to sea and there dumped.

To prevent caving in of the earth around the vertical sides of the pit, or indeed any displacement of it which might cause settlement of the pavement and

endanger property and traffic, the excavation was enclosed by 1200 feet of permanent retaining wall built in short sections as fast as the surface of the rock was exposed. For the base of this wall there were required more than 1000 cubic yards of 1:2:4: concrete mixed in a portable mixer and heavily doweled to the solid rock. On this massive footing there was built an upper portion made with rubble stone derived from the excavation itself. This construction, besides being less costly than the usual method of driving a great wall of steel sheet piles and then removing them, had the important advantage of eliminating necessity of a costly system of inclined braces required by the sheeting that would have seriously obstructed the excavation operations.

A few feet beyond this wall there was built a high, tight board fence enclosing the site, and at the east end of the block a platform was erected over the sidewalk, and on it were established the offices of the contractor, architect, and timekeeper, commanding a view of all operations. Between the retaining wall and the enclosing fence there were located the blacksmith shop, repair shop, storage sheds, power plant, and the other essential facilities required by the contractor, besides a system of eight great derricks, spaced at approximately equal distances apart and having 70- and 80-foot booms equipped with double-drum electric hoists and swinger engines that commanded almost all of the working area except a small strip in the center, just beyond their radii. Two sumps were driven in advance of general excavation, and the ground water and surface water collected in them was removed by the constant operation of part or all of a system of electric- and gasolene-driven pumps that raised the water to a maximum height of 50 feet more than where it was lifted by the suction alone. At night the entire lot was brilliantly illuminated by 1000-watt floodlights.

The contract requirement for the excavation of about 125,000 cubic yards of hard gneiss rock at a schedule rate of 1000 yards per day made it imperative to shatter and remove it at high speed and with great efficiency. It was possible to blast and load it in great quantities, but loading and hoisting in the pit and removing it with a fleet of more than 50 powerful trucks required careful planning and continuous operation. The problem was solved by the installation of an ample air-compressing and distri-

Excavating, Before Removal of The "Garden's" Tower and Walls; New York Life Building
Cass Gilbert, Architect

bution plant, the operating of a maximum of 43 pneumatic rock drills, the use of large quantities of 40 per cent dynamite, and the employment of three steam shovels to handle as much as possible of the shattered rock and load it directly to trucks at the bottom of the pit, or into an equipment of 50 2-yard steel scale pans that were distributed in groups within the radius of each derrick, hoisted by them, and dumped into trucks waiting at the street level.

Special care was taken never to swing the loaded derrick booms over the steam shovels, and the work progressed so rapidly that as many as 175 cubic yards of rock per hour were hauled away from the pit. One steam shovel with a seven-man crew, including five muckers, loaded as many as 61 5-ton trucks in a single eight-hour shift, and in 91 working days 5870 truck loads of rock were removed from the pit. About 22 per cent of it was sold for local building operations, and the remainder dumped at sea.

The electrical air compressors, with a capacity of 2500 cubic feet per minute, delivered to a 1200-foot belt main with numerous vertical pipes that descended to the bottom of the pit and were coupled to manifolds supplying the drills through 50-foot lengths of flexible hose. Each drill averaged about 90 linear feet per day of holes about 12 feet deep which were fired in groups, three times a day, after having been carefully protected by several layers of wire rope mats that effectually intercepted flying fragments. A force of six men and two special machines were in constant operation to sharpen bits.

At the west end of the block about 127,000 yards of debris, earth and rock were excavated down to a depth of about 44 feet, and at the east end the excavation over about one-third of the entire area of the lot was carried down 72 feet by the removal from this part of the pit of about 21,000 additional yards of rock, that was handled exclusively by the derricks and scale pans, the latter with their 7000-pound loads being hoisted at a single line speed of about 350 feet per minute, about three hoists being required for one truck load. As many as 70 trucks were loaded by one derrick in a single shift of 7½ hours. A maximum force of about 325 men working single shifts was required, and the work progressed steadily without accident or interruption and with very slight expense for maintenance, renewals or repairs of the powerful machinery which the contractors installed.

Excavation Nearly Completed; New York Life Building
Cass Gilbert, Architect

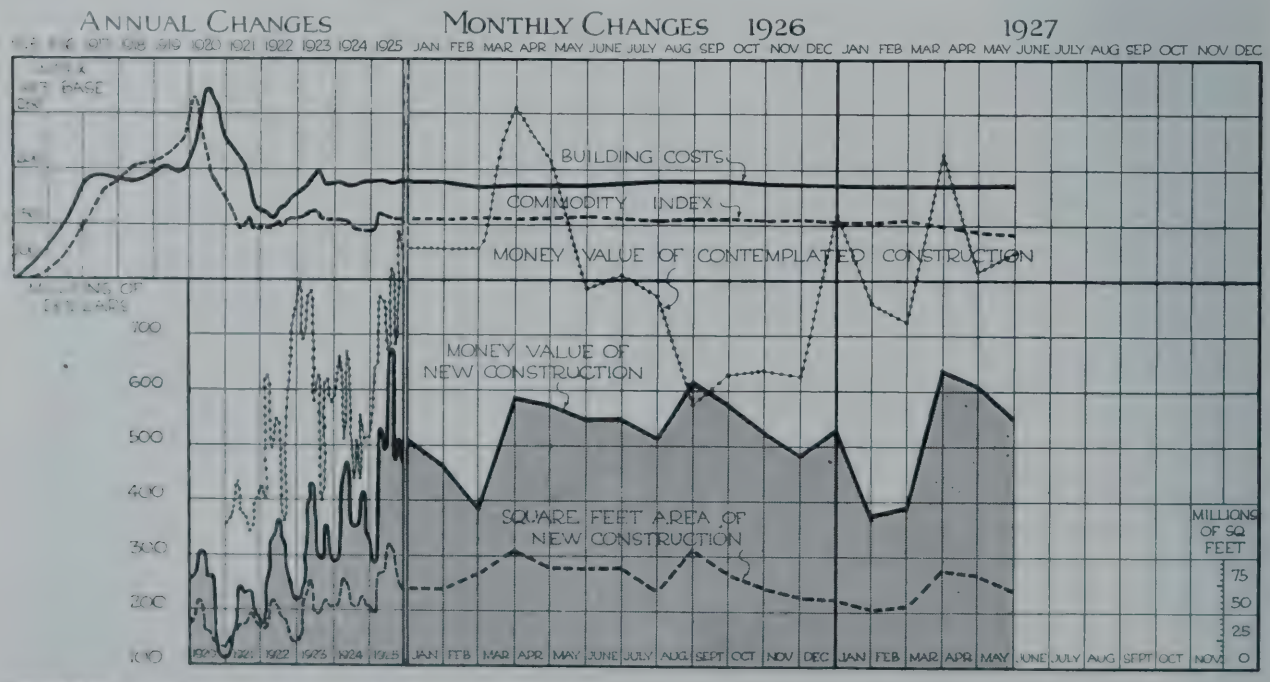
THE BUILDING SITUATION

A MONTHLY REVIEW OF COSTS AND CONDITIONS

THE first five months of this year have shown a volume of building activity which somewhat unexpectedly has kept up to a close approximation of the figures of the corresponding period of 1926. According to reports of the F. W. Dodge Corporation, the total value of new construction started in the period from January to May of this year is $2,550,515,300, which is only 1 per cent behind the corresponding five months of last year. As indicated on the chart below, the filing of plans has been unusually active in the months of March, April and May, indicating a considerable demand for new buildings and promising a continuation of the activity which the first part of the year has shown. The monthly totals of plans filed and contracts let for new buildings are shown in the chart, but as these are national figures, it may prove interesting to find out what is happening in various individual districts.

The first five months' construction total for the New York district shows a decrease of about 12 per cent from the phenomenal activity of last year. In New England the same comparison shows a decrease of 2 per cent for the first five months. In the Middle Atlantic states, including Pennsylvania, southern New Jersey, Maryland, Delaware and Virginia, the activity of the first five months is 16 per cent greater than last year. The Pittsburgh district shows an increase of 11 per cent over the first five months of last year. The Central Western district shows an increase of 21 per cent; the Northwest a decrease of 23 per cent, and the Southeastern states a decrease of 30 per cent. In other words, New York and New England are continuing to maintain their pace. The Middle Atlantic, Pittsburgh district, and Central West are showing a considerable increase in activity as compared with last year, while all other districts except the Pacific Coast have slowed down.

Reports indicate that while there was some slowing up in architects' offices at the first of the year, everyone is busy again except perhaps in those districts where a slowing down of activity has already been indicated. The type of new plans under preparation seems to be more greatly varied than at any time for several years. All kinds of buildings and an unusual number of interesting alterations are passing over the boards of architects, and it is particularly to be noted that a large number of deferred projects seem now to be rapidly approaching the contract stage. The mortgage market still continues to hold firmly, and there is no sign of any tightening.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Corp., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the left of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the right of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined, first by the trend of building costs, and second, by the quality of construction.

THE ARCHITECTS' FORUM

The Major Motif in the Sixtieth Convention, A. I. A.

By THOMAS E. O'DONNELL

MYSELF when young did eagerly frequent
Doctor and Saint and heard great argument,
But ever more came out by that same door
Where in.....I went." So sang Omar Khayyam, the tentmaker, scientist, and poet, in the Rubaiyat, eight centuries ago. He was a learned man, and no doubt attended the "conventions" of his day, listened to the usual round of addresses, papers, resolutions, discussions and . . . great argument . . . by the leaders of the societies, and perhaps came away feeling that out of it all he had gained very little. A modern convention is, too frequently, a whirl of sessions and endless discussion, which becomes involved, loses sight of the larger issues, and often goes about in circles, getting nowhere, reaching no definite or valuable conclusion, and offering little or no inspiration to those who have attended its sessions.

Not so, however, with the Sixtieth Convention of the American Institute of Architects held in Washington on May 11, 12 and 13. From the beginning of the opening to the very close of the final session the Convention was largely inspirational. There was, to be sure, the usual business to be taken care of,—reports of committees and the attendant discussions, the passing of resolutions and . . . argument, by those who still persist. But on the whole all of this was reasonably confined, and the Convention was clearly dominated by the larger ideals, the more fundamental and far-reaching problems before the architectural profession. Even the reports of the committees showed not only a great amount of careful work, but also a spirit of devotion and service in the interests of humanity at large, and not merely in the interest of the profession, that was encouraging.

It was clearly evident that the Convention was designed to give a large measure of attention to Architecture as an art; the keynote was that of collaboration between the architect, the landscape architect, the painter, the sculptor, and the craftsman. It was the hope that the beginning might be made in the formation of a plan whereby closer collaboration between the architect, artist and craftsman might be made possible under modern working conditions. It was pointed out that there was need for a new vision in the practice of architecture, and that it should arise in the hearts and minds of the architect and his associated workers, and that they should join in a rededication of their labors to the ideals of their arts.

The opening address by President Milton B. Medary established at once a high level upon which to stage the activities of the Convention. The ideals, possibilities and hopes of the American Institute of Architects were clearly set forth. There were expressed a sympathetic understanding of the problems confronting the profession and an appreciation of the accomplishments and progress already made. There was a plea to keep our architectural expression conservative, dignified, and of the highest order. A timely warning was sounded against impatience for a new architecture. Our architecture, like our language, is a growing, changing thing, not something to be suddenly altered in its elements or expression. There was also given a warning against the fallacy of an American architecture that is distinct and apart from that of the rest of the world, for America is becoming more and more a part of the world, with the same general influences operating, and consequently American architecture must of necessity be a part of the world's architecture. The obligation is for each architect to contribute to the utmost that which is within him to the great architecture of the world, and to encourage those who follow to continue to build upon the same ideal. It was recognized, however, that the architect is not alone responsible for the great structures of the world. Artists and craftsmen have played important parts and have made possible the execution of the architects' dreams. An examination of any great piece of the world's architecture shows evidence of the collaboration of the architect and the workers in the allied arts.

The President of the Institute and his co-workers, in looking about for a great ideal whereby the Institute might be of the greatest service, took for their major motif one vital subject,—the collaboration of the architect, the landscape architect, the painter, the sculptor and the craftsman, and made a strong plea to inaugurate understanding coöperation of all those whose lives are dedicated to the service of the several arts, both in the schools and in the actual building of the fabric of the world. Since architecture has long since been considered the "mother" of the arts, it must be recognized that there is, or should be, a relation of interdependence between them, for it is obvious that no architecture can be or ever has been created that is not an assemblage of the arts. To bringing out this relationship of interdependence and to the advisability and need for collaboration between the architect, artist and craftsman, the entire morn-

ing of the first day of the Convention was given to a carefully arranged series of addresses by men distinguished in the fields of architecture and the allied arts,—C. Grant La Farge on architecture; Arthur A. Shurtleff on landscape architecture; Arthur S. Covey on painting; John Gregory on sculpture; and Lorentz Kleiser on craftsmanship. Each speaker set forth in a very fine way the ideals and aspirations of those he represented, of the relation of their art, as they saw it, to architecture, and indicated their willingness and desire to collaborate to the fullest degree with the architect in making architecture an art in the true sense and worthy of its function.

The evening session of the first day of the Convention was likewise devoted to a furtherance of the idea of collaboration. An opportunity was provided for discussing the various phases of the subject brought out by the speakers of the morning, and finally for consideration of the full report of the Institute's Committee on Allied Arts. This report was presented by the Chairman, C. Grant LaFarge, who presented in an able manner what was evidently a most thorough study of the relation of architecture and the allied arts. The committee had been charged with "the importance of emphasizing the art of architecture rather than its material aspects, and of dwelling upon the principle of collaboration." Every means of bringing about a closer and better understanding between the architect and his co-workers was considered, and plans were suggested pointing to a comprehensive scheme whereby the work and abilities of worthy artists and craftsmen could be made known and readily accessible to the architect. To make the work of the committee more effective, representatives of all the sister arts were asked to serve on the committee with the architects, thus taking a practical step toward working out a plan for full coöperation and collaboration. The committee also suggested that it is desirable to foster collaboration between the various art interests in the schools, and thus lay the foundation of professional collaboration in later years. Such a scheme of collaboration is now being fostered in the work of the American Academy at Rome, and has been for years.

Interspersed throughout the sessions of the Convention there was the usual routine business, but even that was not lacking in interest because of the large number of very valuable reports of committees. These were in most cases carefully prepared, well presented, and discussed in a profitable manner. The work of many of the committees has a far-reaching influence. Few fully realize what a valuable work is being done in the interests of architecture and the arts by the various Institute committees that work quietly from year to year, and in the work of which some of the best minds are engaged. The Committees on Allied Arts; Public Works; Plan of Washington and Environs; Education; Public Information; Community Planning; Registration Laws; School Building Standards; Industrial Relations; and on Small Houses are but a few of the selected groups of men who are giving their best thought to formulating plans for improving the character of the service which the architect can render to his community, and which he is giving.

Although all the various activities of the Convention contributed to its value and success, the dominant note running throughout all the proceedings was that of collaboration between the architect and his co-workers. The idea is not new. It has long been discussed and desired by most thoughtful architects, but at the Sixtieth Convention the idea has been carried further forward than ever before, and the committees and the architects in Convention have set for themselves a worthy problem that may well occupy their attention for some years to come. Much has been accomplished, but much more remains to be done. The Institute has fully identified itself with the idea of collaboration. The architects are the logical men to foster and make possible such a system of collaboration as is proposed. The workers in the field of the allied arts are looking to the architects to make collaboration possible, and apparently stand ready to coöperate; and in response the architects have put into operation a plan of recognizing the accomplishments of artists and craftsmen by the awarding of medals for their notable achievements.

It was, therefore, a fitting climax to the Convention that the last session should again be given to addresses on Architecture and the Allied Arts, by Charles Moore, Chairman of the Commission of Fine Arts, and C. Grant LaFarge, Chairman of the Committee on Allied Arts, and that at its close the American Institute of Architects should honor craftsman, sculptor and architect, by awarding the Craftsmanship Medal to Frank Holmes, craftsman; the Fine Arts Medal to Lee Lowrie, sculptor; and by presenting to Mrs. Shaw the Gold Medal, previously awarded to the late Howard Van Doren Shaw. To the architects who were looking for material help in their profession the Sixtieth Convention of the American Institute of Architects offered but little; it was designed on a higher and wider basis. But for those who were seeking inspirational ideas, opportunities for entering upon a nation-wide service and contributing to the architectural fabric of our country and who were desirous of collaborating to the fullest extent with their associates in the arts,—to these the Convention offered an abundance of material for highly profitable thought.

SMALL BUILDINGS

Photos. Gabriel Moulin

HOUSE OF DONALD B. PARKINSON, ESQ., SANTA MONICA, CALIF.
JOHN AND DONALD B. PARKINSON, ARCHITECTS

APPROPRIATE to the climate of southern California, this attractive one-story house has low sloping tile roofs and open porches and loggias. The design is interesting in its simplicity and long, low lines. Breaking the height of the several small buildings which make up the composition adds to the picturesqueness of the group and obviates the monotony of continuous roof levels. Another variation in the design which adds interest is the placing of the studio at an angle with the main house. Any possible deviation from the rectangular type of plan frequently adds charm to the design. The plan of this house is unusually well thought out. An arched loggia divides the house into two parts; one of these divisions contains a large living room, bedroom, dressing room, closets and bath; the other division, which is much the larger of the two, contains the dining room, pantry, kitchen, laundry, servant's room, a large garage and a studio. Thus the house is divided into living and service quarters. It is unusual, of course, to find only one bedroom in so large a house, but it is interesting to note the successful way in which individual requirements may be worked out in plan and detail. The walls of the entire building are constructed of reinforced concrete, so built that an air space is left between the inner and outer portions of the wall. The exterior of the concrete walls has been left rough, with the form lines showing.

Plan, House of Donald B. Parkinson, Esq., Santa Monica, Calif.
John and Donald B. Parkinson, Architects

FORUM SPECIFICATION AND DATA SHEET—182

House of Donald B. Parkinson, Esq., Santa Monica, Calif.
John and Donald B. Parkinson, Architects

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:
Hollow poured reinforced concrete wall construction; wooden floor and roof construction.

EXTERIOR MATERIALS:
Rough concrete, finished with brush coat of cement grout and whitewashed.

ROOF:
Clay tile.

WINDOWS:
Wooden casements.

FLOORS:
Oak, brick, cement and tile.

HEATING:
Gas hot air furnace.

PLUMBING:
Standard equipment; gas-fired hot water system.

ELECTRICAL EQUIPMENT:
Refrigeration, laundry equipment, etc.

INTERIOR MILLWORK:
Oak, redwood and fir for stained finish; fir, pine and cedar for painted.

INTERIOR WALL FINISH:
Brush coat of cement and cold water paint on rough concrete walls; lead and oil paint on smooth plastered walls.

DECORATIVE TREATMENT:
None, except furniture, hangings and polychrome tile.

APPROXIMATE CUBIC FOOTAGE:
45,000.

COST PER CUBIC FOOT:
53 cents.

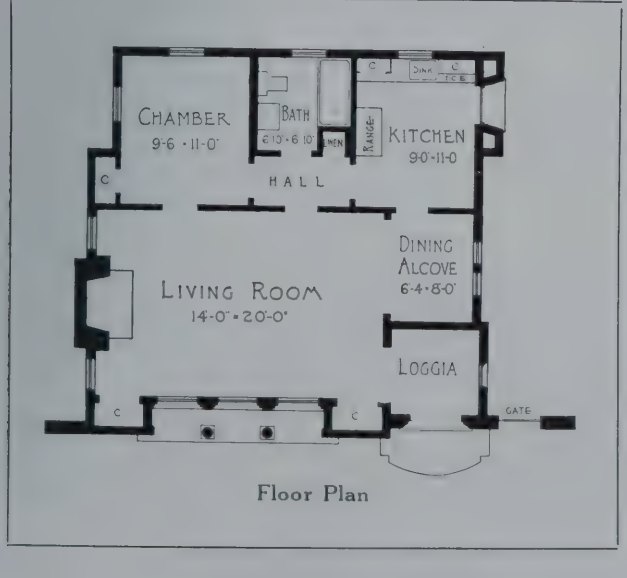
YEAR OF COMPLETION:
1924.

Detail of Entrance, House of Donald B. Parkinson, Esq., Santa Monica, Calif.
John and Donald B. Parkinson, Architects

Photos. Tebbs & Knell, Inc.

BUNGALOW IN THE SPANISH STYLE, CHICAGO

ANY variety in the architectural treatment of small houses successfully carried out is a welcome addition to the architectural vocabulary of this type of building. Of course proper regard for the appropriateness to its surroundings of a style of architecture as individual as Spanish should always be considered. This little building in Chicago might much better have been located in San Diego, or Palm Beach, but taken by itself, without regard to its location, it is an excellent example of the adaptation of the Spanish style to modern requirements. The exterior design shows a one-story building, with an arrangement of openings indicative of the interior plan. On the right is the entrance, simply decorated with Spanish details, leading into the hall of the building. At the left of this opening is an arcade treatment of three casement windows extending to the floor. Highly ornamental spiral columns separate the three openings. The capitals of these columns are repeated on the walls with pilaster caps of similar design used as corbels. The openings in this triple arcade are protected by interesting iron railings. Against the warm toned, rough stucco walls twisted copper leaders emphasize the Spanish treatment of the design. Above the copper gutter, a low sloping roof, covered with Spanish tile further emphasizes the individual character of the building. Over the entrance door the exterior wall is carried up several feet above the projecting roof to give the effect of a low tower, in the center of which, as a detail of interest, is a square Spanish tile in yellow, green and blue. At the right and left of the building, low stucco-covered walls and piers capped with red tile partially enclose and conceal the service quarters and heighten the Spanish character of the house.



Floor Plan

FORUM SPECIFICATION AND DATA SHEET—183

Bungalow in the Spanish Style, Chicago

OUTLINE SPECIFICATIONS

EXTERIOR:
Walls, hollow tile covered with stucco on the front; rear walls, stucco on metal lath over frame construction.

EXTERIOR TRIM:
Wood.

ROOF:
Spanish tile.

WINDOWS:
Metal casements.

FLOORS:
Oak; bath room floor, vitrified tile; kitchen, composition; rubber tile in imitation of marble used for living room.

HEATING:
Hot water, with gas as fuel.

LIGHTING:
Polychrome wrought iron fixtures.

INTERIOR MILLWORK:
White wood throughout.

WALL FINISH:
Three-coat plaster applied upon hollow tile.

COST PER CUBIC FOOT:
35 cents.

YEAR OF COMPLETION:
1924.

A Small House in the Spanish Style, Chicago

HOUSE AT WESTWOOD HIGHLANDS, SAN FRANCISCO
CHARLES F. STROTHOFF, ARCHITECT

Plan, House at Westwood Highlands, San Francisco
Charles F. Strothoff, Architect

FORUM SPECIFICATION AND DATA SHEET—184

House in Spanish Style, Westwood Highlands, San Francisco; Charles F. Strothoff, Architect

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Cement plaster.

ROOF:
Tile, felt and brick, and cedar shingles.

WINDOWS:
Wood sash.

FLOORS:
Clear, plain and quarter-sawed oak.

HEATING:
Hot air, gas; wood and coal, and oil burners.

PLUMBING:
Standard fixtures.

INTERIOR MILLWORK:
Oak.

INTERIOR WALL FINISH:
Stucco.

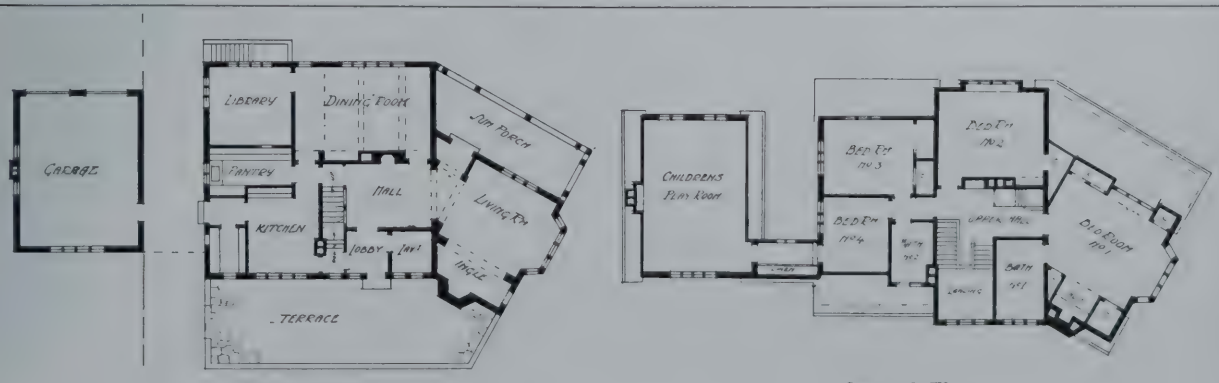
THIS one-story house covers a large area, much more in fact than would have been economical in the East where building cost per square foot runs much higher than in the West. Undoubtedly, with the exception of the garage located under the bedroom end of the house, there is very little cellar or basement. When a basement is required under an entire house, as is customary in colder climates where heating plants and storage for coal have to be included, the cost of excavating and carrying foundation walls 3 feet below the cellar floor level so greatly increases the cost of the building that the square foot area is necessarily kept at a minimum. Probably nowhere in this country except California could so large a one-story house as this be built at so moderate a price as $16,000, which the architect says was the cost. The plan is well balanced and logically divided. One-half is occupied by the living quarters and the other by sleeping rooms and baths. The only criticism of the plan is the fact that one of the entrances to the kitchen opens directly into the hall leading to the bedrooms. Even this arrangement might not be objectionable if the mistress of the house does her own work, as is so often necessarily the case. The living room is well proportioned with windows on three sides and double doors opening into both entrance hall and dining room. More privacy might have been obtained in the living room had one of these doorways been single instead of double. It also seems rather unfortunate that the small room marked "nook" was not made a part of the dining room so as to increase its size and importance. Instead of the "nook" or breakfast alcove, a small breakfast table might have been placed in the large bay window of the dining room. Back of the kitchen a stairway leads down to a rear or servants' porch on a lower level. The open court or patio on which the main entrance of the house opens, helps to tie together the two wings of the building, and gives dignity to the entrance front. Interesting Spanish motifs add stylistic character to the exterior elevations. A greater uniformity of design in the iron work which ornaments the window openings and the entrance terrace might have increased the consistency of the design. The highly decorative shutters of two of the living room windows add a touch of color and interest which might well have been repeated on the windows of the bedroom wing. The Spanish tile of the roof is in keeping with the style of the house, but it does not count for much on the bedroom wing, where it acts as hardly more than a coping for the extensive flat roof covering this wing. It would seem as though considerable character and picturesqueness would have been added to the design of this house had the roof over the bedroom wing been carried up to a height required by a continuation of its slope. There is a certain feeling about the type of detail used in the design of this house, which somewhat suggests the modern architecture found in Havana and its suburbs.

Particularly pleasing, of course, is the use of the Spanish domestic type of architecture for a house in California. So definitely is this type identified with parts of the United States which were settled by the Spanish, such as portions of Florida and certain parts of the Southwest, that one feels that the type belongs to those localities and to no other. Then, too, the architect has wisely adhered to use of just the materials which were used for early Spanish buildings of any sort,—to stucco, which was used as often as adobe, for the walls, to tiles for the roofs, and to metalwork in the form of iron window guards. Agreeing well with the Spanish architecture is the plan of the house, which consists of but one floor, with rooms disposed in a somewhat rambling fashion; and what is particularly successful in this instance is the way in which the house has been fitted to a site of an irregular character, for it is not easy to adapt a structure which is low and spreading to a building plot which includes abrupt slopes or grades.

Photos. Schuyler C. Lee

HOUSE OF H. M. MUHLENBROCK, ESQ., CRANFORD, N. J.
A. R. HENNELL, ARCHITECT

DESIGNED by a Fellow of the Royal Institute of British Architects, this house shows several details characteristic of modern English work. The tall chimneys are somewhat simpler than their English prototypes, undoubtedly due to the high cost of building in America. The use of mullioned windows in groups as well as that of wood in half-timber forms is also characteristic. Had the frames of these windows been constructed of hard wood and stained like the half-timber work and posts of the sun porch, the exterior effect might have been more harmonious. The sharp contrast in color between the window trim and the walls of the house is particularly noticeable in the entrance door and the two small windows on each side. Vines and additional planting will help to soften the lines of the house and its apparent newness. The location of the garage and its connection with the main house are happy and effective, giving as they do a greater length to the whole design than would otherwise have been obtainable. The house itself is practically square except for the living room, which projects at a slight angle. The front door is easily accessible from the main hall as well as the kitchen, which is desirable.



First Floor Second Floor

House of H. M. Muhlenbrock, Esq., Cranford, N. J.
A. R. Hennell, Architect

FORUM SPECIFICATION AND DATA SHEET—185

House of H. M. Muhlenbrock, Esq., Cranford, N. J.; A. R. Hennell, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Hollow tile, first floor, frame upper stories.

EXTERIOR MATERIALS:
Brick, granite, Jersey oak (adzed), stucco, shingles and cedar clapboards.

ROOF:
Cedar shingles, dipped.

WINDOWS, TYPE AND MATERIALS USED:
Steel cottage casements imported from England.

FLOORS:
Oak.

HEATING:
Steam (vapor).

PLUMBING:
Standard plumbing fittings.

ELECTRICAL EQUIPMENT:
Duplex cable, copper fittings.

INTERIOR MILLWORK:
Oak, white wood and birch.

INTERIOR WALL FINISH:
Smooth plaster.

INTERIOR DECORATIVE TREATMENT:
Walls painted.

APPROXIMATE CUBIC FOOTAGE:
75,470, including garage.

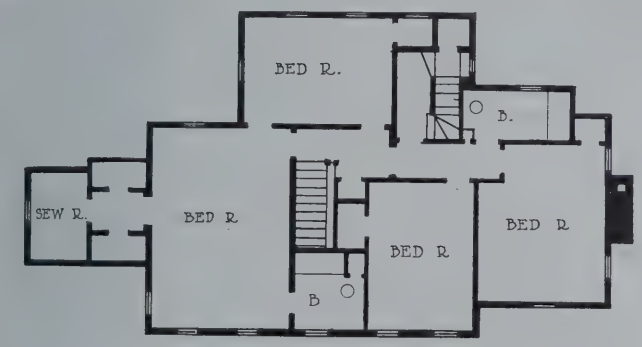
COST PER CUBIC FOOT:
55½ cents.

YEAR OF COMPLETION:
1922.

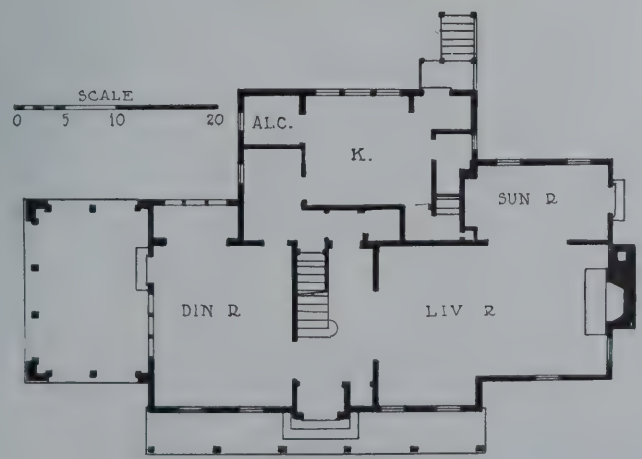
Detail, House of H. M. Muhlenbrock, Esq., Cranford, N. J.
A. R. Hennell, Architect

Photos. Paul J. Weber

HOUSE OF MRS. G. B. ROGERS, PELHAM MANOR, N. Y.



Second Floor



First Floor

Plans, House of Mrs. G. B. Rogers, Pelham Manor, N. Y.

THERE are many companies in this country today which design and build small houses for real estate developments. It is an encouraging sign of the increasing good taste throughout the country when one finds a small house possessing as much simple dignity and charm as this. The proportions of the building as a whole are excellent, and the scale of the windows is successfully studied and carried out. The old fashioned porch across the front of the house gives a homelike and hospitable character. The plan also has interesting features, such as the spacious living porch and the small breakfast alcove adjoining the dining room, and the unusual size of the living room obtained by extending it into the wing of the house. The kitchen and pantry are of adequate sizes and are conveniently located as regards the front hall and dining room. On the second floor are four good sized bedrooms and two baths, good closet space and a small sewing room, the latter located over the living porch. The plans are so worked out that they make this a comfortable and convenient small house and prove that it is possible to obtain attractive results, no matter how small the house.

FORUM SPECIFICATION AND DATA SHEET—186

House of Mrs. G. B. Rogers, Pelham Manor, N. Y.

OUTLINE SPECIFICATIONS

GENERAL CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Wood.

ROOF:
Shingle.

WINDOWS:
Casement and double-hung.

FLOORS:
Kitchen and pantry, and second floor, pine; the rest, oak.

HEATING:
Steam and fireplace.

PLUMBING:
Usual.

ELECTRICAL EQUIPMENT:
Usual.

INTERIOR WALL FINISH:
Living room and dining room, sand-finished plaster.

Perspective, House of Mrs. G. B. Rogers, Pelham Manor, N. Y.

HOUSE OF LEO FERRARA, ESQ., NEW ROCHELLE, N. Y.
D. A. SUMMO, ARCHITECT

ENGLISH architecture has been used as the inspiration for the design of this small house. Rough stone, brick, stucco and wood in half-timber forms are the media used to obtain the result. The massive chimney which dominates the design would have appeared as an integral part of the house much better had the adjoining gable bay been constructed of the same rough stonework as the chimney. The use of several different materials in a small house is often rather disturbing. The steep pitched roof gives character to the design and helps to balance the tall chimney. Undoubtedly a projecting dormer window over the sun porch would have been more pleasing in effect than the opening left in the roof to provide for a second story porch. There are matters in design over which an architect often has no control, as clients have a way of insisting upon certain details which often detract from the artistic and picturesque appearance of houses. The living hall and sun porch make a sizable room, adding to the ground floor area.

First Floor Second Floor

Plans, House of Leo Ferrara, Esq., New Rochelle, N. Y.
D. A. Summo, Architect

FORUM SPECIFICATION AND DATA SHEET—187

House of Leo Ferrara, Esq., New Rochelle, N. Y.; D. A. Summo, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame, stucco and brick veneer.

EXTERIOR MATERIALS:
Stucco and brick.

ROOF:
Slate.

WINDOWS:
Wood casements.

FLOORS:
Oak.

HEATING:
Hot water.

INTERIOR MILLWORK:
Oak and white wood.

INTERIOR WALL FINISH:
Sand finish, with color.

APPROXIMATE CUBIC FOOTAGE:
36,000.

COST PER CUBIC FOOT:
60 cents.

DATE OF COMPLETION:
June, 1925.

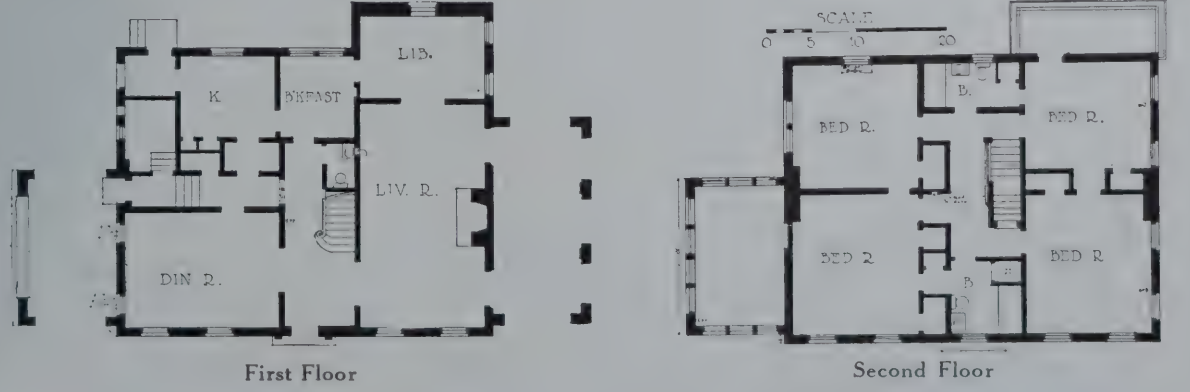
Entrance, House of Leo Ferrara, Esq., New Rochelle, N. Y.
D. A. Summo, Architect

Photos. Edison-Wheat Studio

HOUSE OF H. M. HOLDEN, ESQ., HOUSTON, TEX.

JOSEPH W. NORTHROP, JR., ARCHITECT

HERE is a brick house in the Colonial style, white painted and with green shutters, which might be found anywhere in the suburbs of Boston or Providence. The difference in size between the windows of the first and second story is one of several details which give true Colonial character to the exterior. The front door is excellent both in proportion and design. As early New England houses never had sleeping porches, and very seldom piazzas or first floor verandas, the addition to a Colonial design of such conveniences is always difficult to handle. In this case the arch over the garage driveway is pleasantly balanced by the arch of the living porch, but the sleeping porch and gable roof above the former do not add to the artistic character of the design. A frank indication of a second story porch is always better than the repetition of second-story windows, and the more open the effect the better. No matter how large the openings may be, it is always possible to have them protected by concealed window sashes which slide down into pockets below the sills. The plan follows the usual arrangement in small Colonial houses,—a living room on one side of the hall and a dining room on the other.



First Floor Second Floor

Plans, House of H. M. Holden, Esq., Houston, Tex.

Joseph W. Northrop, Jr., Architect

FORUM SPECIFICATION AND DATA SHEET—188

House of H. M. Holden, Esq., Houston, Tex.; Joseph W. Northrop, Jr., Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame and brick veneer.

EXTERIOR MATERIALS:
Common brick, painted; cast stone entrance.

ROOF:
Stained cedar shingles.

WINDOWS:
Double lining; pine sash.

FLOORS:
Oak.

HEATING:
Hot water.

PLUMBING:
Porcelain enamel fixtures; built-in tubs; automatic hot water heater.

ELECTRICAL EQUIPMENT:
Base plugs, lights and switches.

INTERIOR MILLWORK:
Pine.

INTERIOR DECORATIVE FINISH:
Woodwork, two coats of paint and one coat egg-shell ivory enamel. Back of china cabinets red Chinese lacquer. Breakfast room walls and woodwork, burnt orange.

APPROXIMATE CUBIC FOOTAGE:
42,500.

COST PER CUBIC FOOT:
52 cents (includes walks, drives, two-car garage and two servants' rooms).

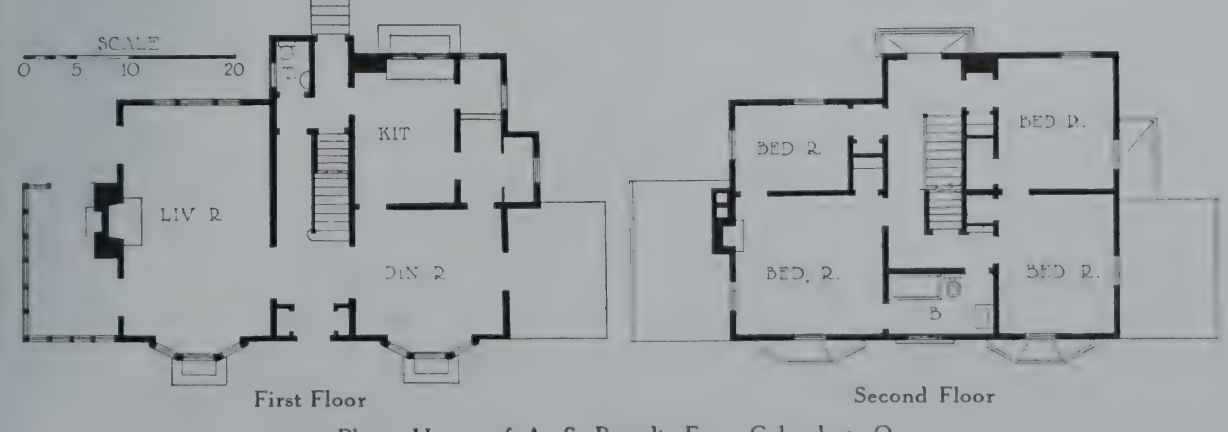
DATE OF COMPLETION:
November, 1924.

Entrance, House of H. M. Holden, Esq., Houston, Tex.
Joseph W. Northrop, Jr., Architect

Photos. Tebbs & Knell, Inc.

HOUSE OF A. S. BRANDT, ESQ., COLUMBUS, O.
MILLER & REEVES, ARCHITECTS

THE charm and character of this house are derived from its simplicity and proportions. The windows are in excellent scale and carefully placed in regard to the wall spaces. Use of shingles on the exterior walls and the good proportions of bay windows give an old fashioned appearance which is very pleasant. An enclosed porch adjoining the living room at one end of the house is balanced by an open dining room porch on the other end. This symmetrical porch treatment adds to the dignity of a house, however small it may be. The plan is simple and straightforward. The long hallway which runs through the center of the house has a spacious living room on one side and a dining room on the other. Back of the latter is a good sized kitchen, a combination pantry and breakfast alcove, and a refrigerator and storage room. Coat closets are appropriately located on either side of the entrance vestibule. Another convenient feature is the lavatory located at the end of the main hall on the first floor. The plan of the second floor is equally compact and carefully studied. No waste space and no unsightly jogs or angles exist. There are four good sized bedrooms and one good sized bathroom on the floor above.



First Floor Second Floor

Plans, House of A. S. Brandt, Esq., Columbus, O.
Miller & Reeves, Architects

FORUM SPECIFICATION AND DATA SHEET—189

House of A. S. Brandt, Esq., Columbus, O.; Miller & Reeves, Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Non-fireproof.

EXTERIOR MATERIALS:
Frame and shingles.

ROOF:
Shingles.

WINDOWS:
Wood, double-hung.

FLOORS:
Oak and pine.

HEATING:
Hot air furnace.

PLUMBING:
Customary fixtures.

ELECTRICAL EQUIPMENT:
Concealed tube.

INTERIOR MILLWORK:
Poplar and white pine, painted.

INTERIOR WALL FINISH:
Smooth plaster.

INTERIOR DECORATIVE TREATMENT:
Wall paper.

APPROXIMATE CUBIC FOOTAGE:
30,000 to 32,000.

COST PER CUBIC FOOT:
45 to 47 cents.

YEAR OF COMPLETION:
1923.

House of A. S. Brandt, Columbus, O.
Miller & Reeves, Architects

INTERIOR ARCHITECTURE

Owlpen Manor House, Gloucestershire—Part I

By HAROLD D. EBERLEIN

OWLPEN MANOR HOUSE, like thousands of other gems of domestic architecture in England, is hidden away in the deep country, far remote from the current of everyday modern life, and much more from the common course of the average traveler, who would never suspect its existence. Even for those who know Owlpen well and cherish a lively admiration for the old house and its unique setting, a journey thither is always somewhat of a momentous pilgrimage; it is not a thing to be casually visited for five minutes *en passant,* on the way to see something else. One goes a long distance to see Owlpen, and Owlpen alone, and the reward is invariably worth the effort. To its very seclusion and difficulty of approach Owlpen in great part unquestionably owes its complete escape from all those petty blights of unintelligent change and "improvement" that elsewhere fall upon so many old houses and rob them of much of their charm. From Dursley, the nearest market town, a longish drive up hill and down dale brings one to the little village of Uley. From the crest of the hill in Uley, a long, steep drop through a deep and muddy lane brings one to a sharp turn to the right, from the bottom of which one could easily keep on through the valley, quite unaware of the house's whereabouts. Instead of turning right, however, a turn to the left into a gated farm lane brings the visitor suddenly in front of the garden gate, with a glimpse of the facade.

An examination of Owlpen Manor House is especially significant and fraught with value on several scores. Although it is a comparatively small house, it nevertheless possesses a great presence. In the next place, the house and its garden are so completely bound together that they form one single entity; one cannot be considered without the other. Third, the fabric is absolutely intact and free from subsequent alterations outside or changes within, and, save for a small addition made in the days of Queen Anne, the house presents virtually the same aspect it showed when the builders left it in 1615. It is a curious fact that, although all Cotswold houses exhibit an unmistakable family likeness, no two of them are alike; each invariably discloses its own individuality. Owlpen Manor House is an apposite instance of this distinctive variability within the type.

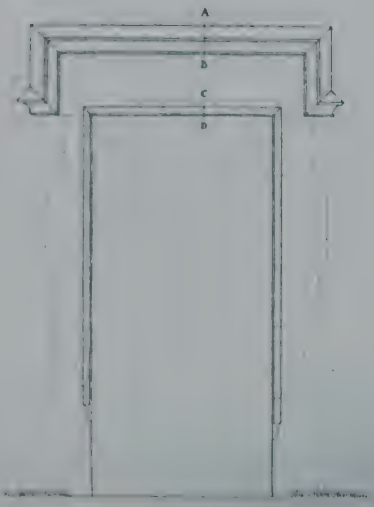
South Garden, Owlpen Manor House, Gloucestershire

2ND FLOOR

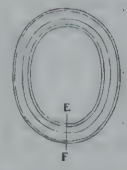
1ST FLOOR

SCALE OF PLANS

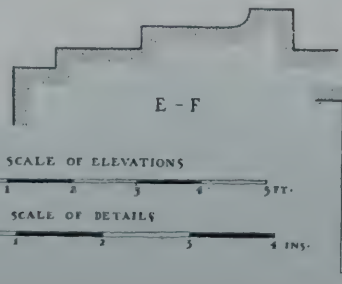
0 5 10 20 30 40 50 60 70 80 90 100 FT

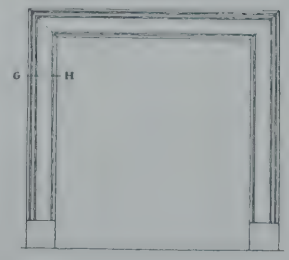


DOORWAY IN GARDEN HOVSE



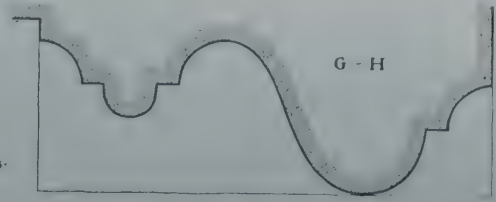
GABLE OPENING IN GARDEN HOVSE

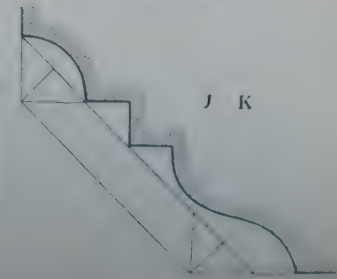




MANTEL IN ROOM "E"

MANTEL IN ROOM "B"



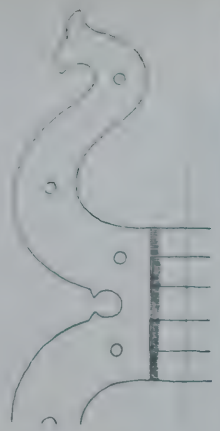


THE MANOR HOVSE.

OWLPEN GLOS.

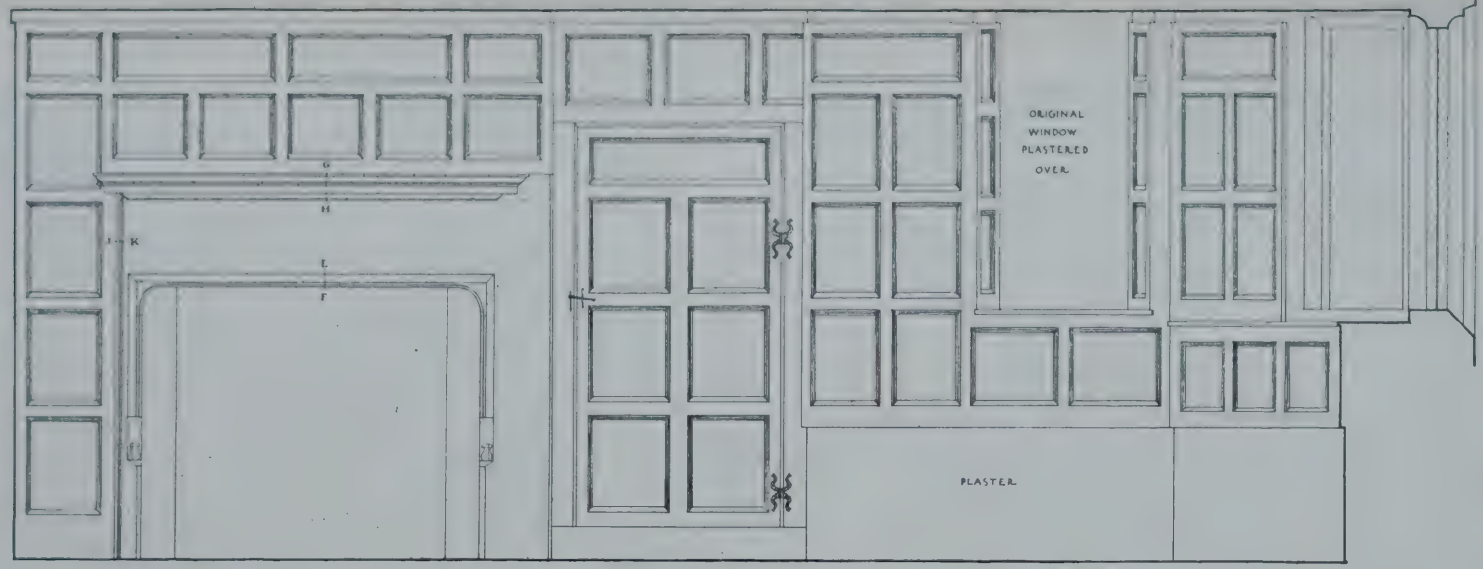
F F A COMSTOCK MEM ET DEL

KITCHEN YARD, OWLPEN MANOR HOUSE, GLOUCESTERSHIRE

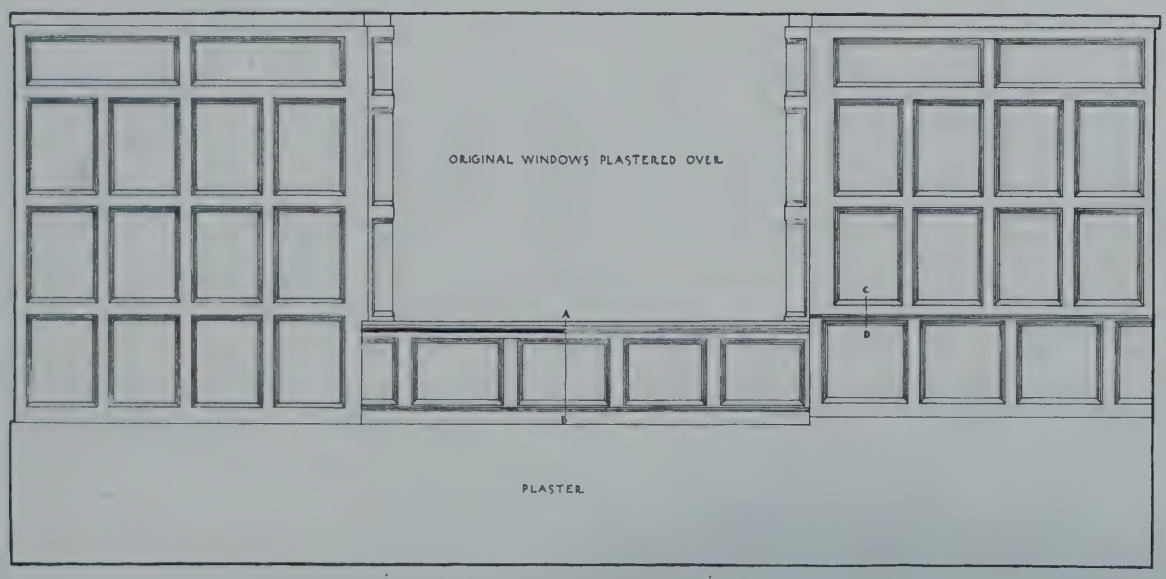


WROVGHT IRON HINGES

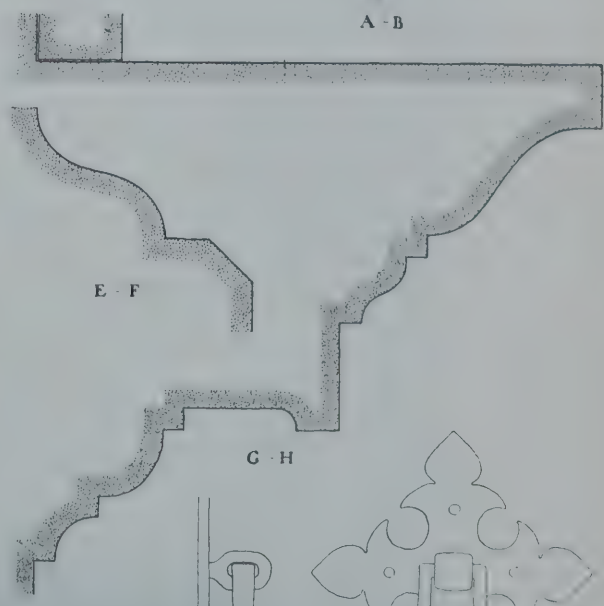
J - K

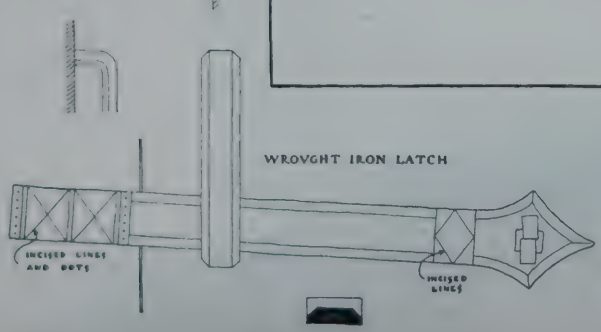


EAST WALL



WEST WALL





SCALE OF ELEVATIONS

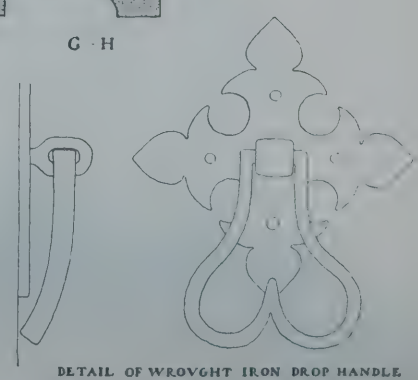
0 1 2 3 4 5 6 FT.

SCALE OF DETAILS

0 1 2 3 4 INS.

THE MANOR HOVSE, OWLPEN GLOS.

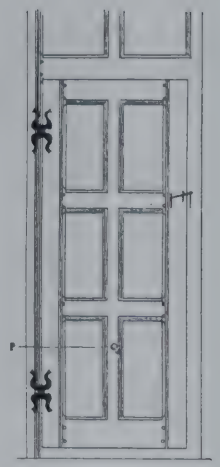
THE DRAWING ROOM



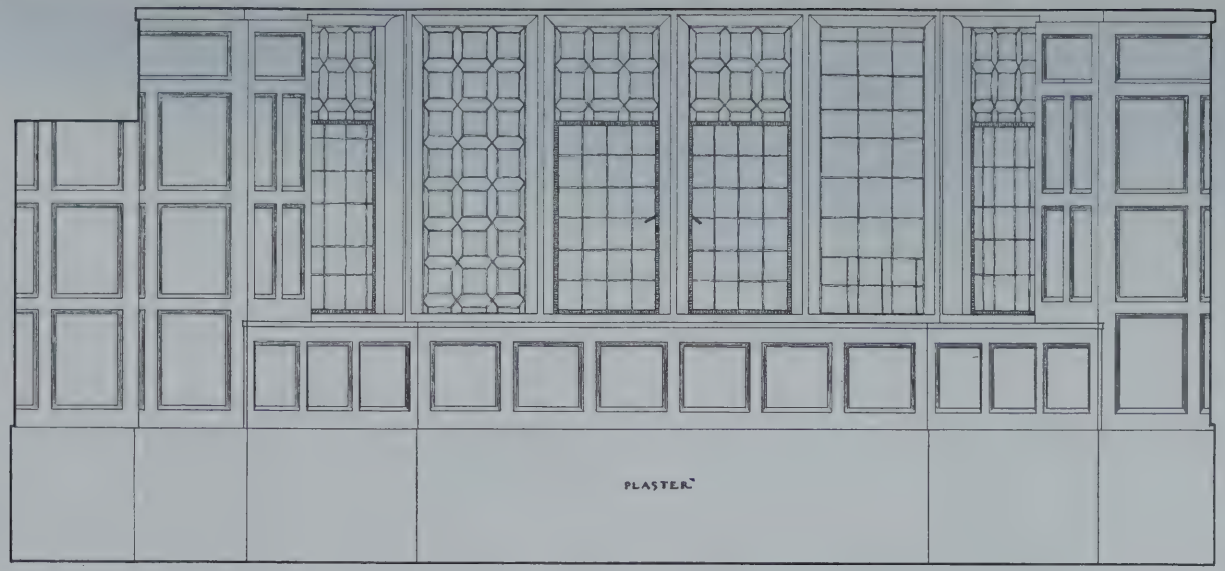
DETAIL OF WROVGHT IRON DROP HANDLE

F·F·A·COMSTOCK MENS·ET DEL.

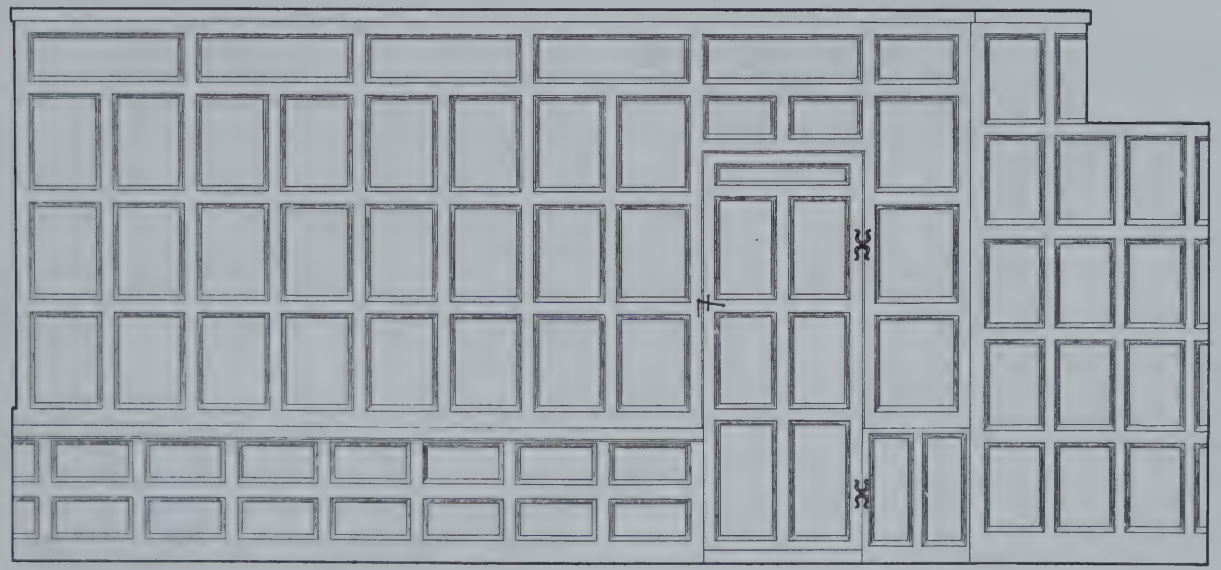
Jy. 1927



CLOSET DOOR - ROOM "C"

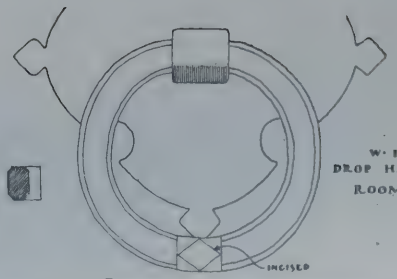


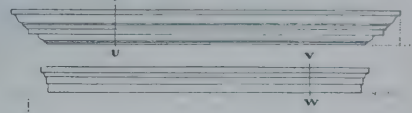
SOUTH WALL

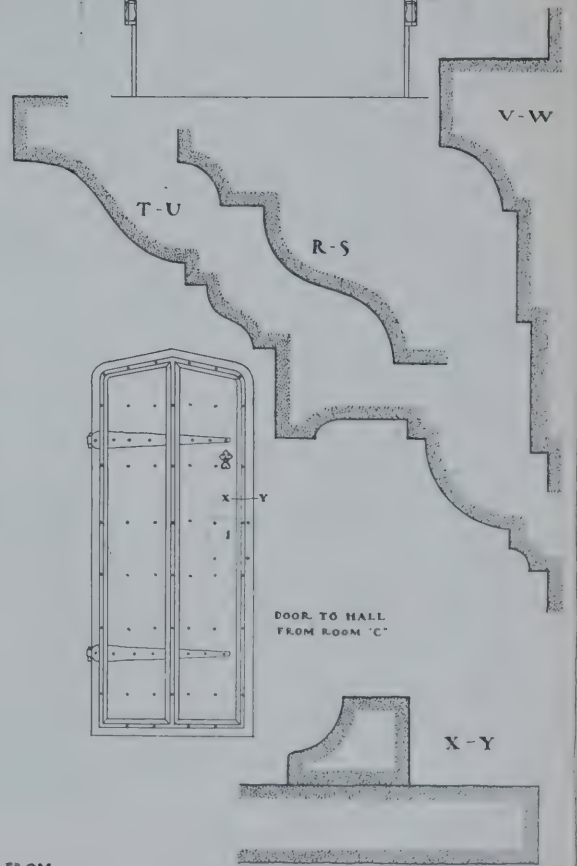


NORTH WALL

CLOSET DOOR - ROOM "E"







OWLPEN, GLOS·· THE MANOR HOVSE·

THE DRAWING ROOM AND DETAILS FROM OTHER ROOMS

SCALE FOR ELEVATIONS

0 1 2 3 4 5 6 FT·

SCALE FOR DETAILS

0 1 2 3 4 5 6 INS·

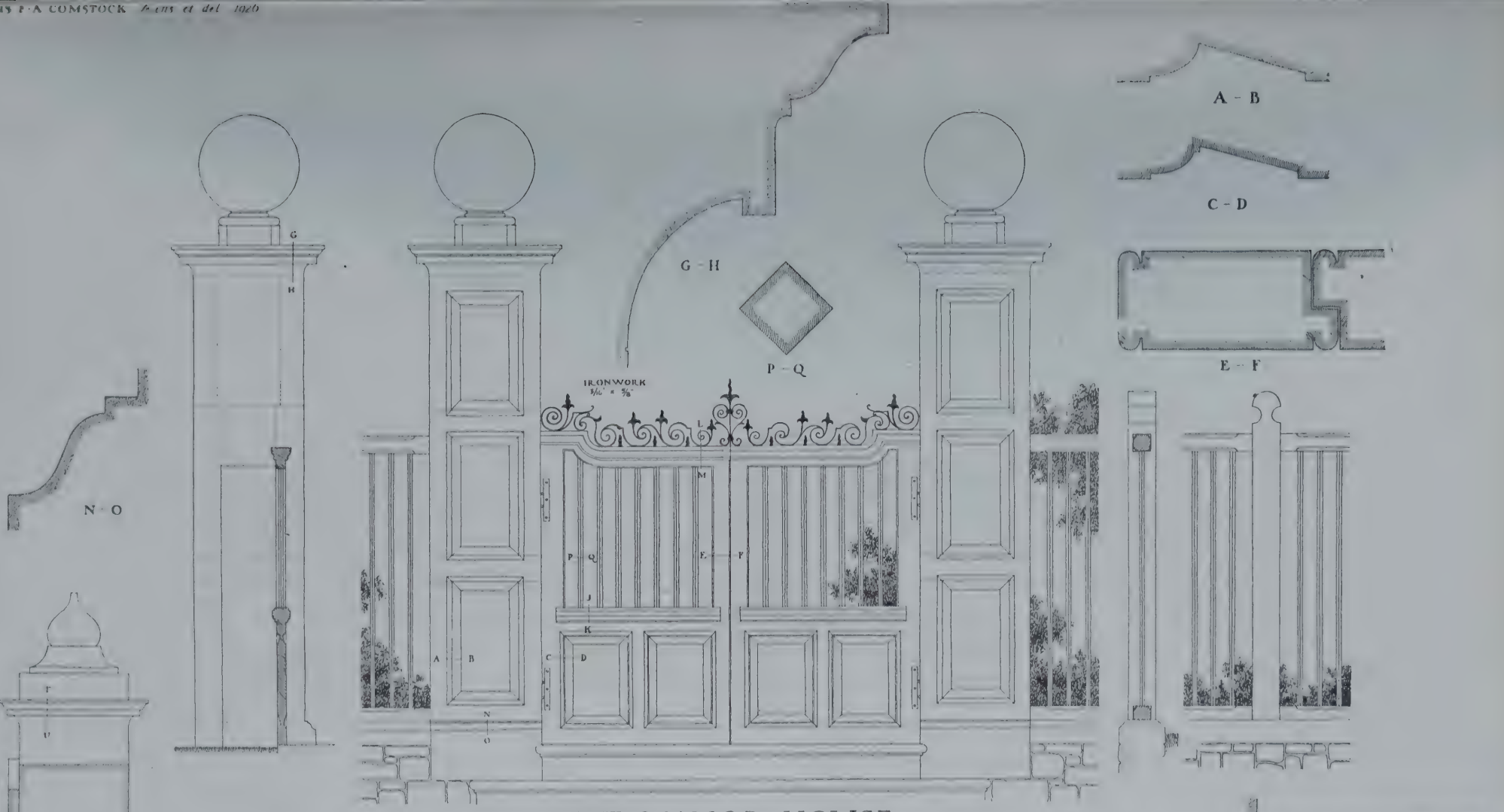
F·F·A·COMSTOCK MENS· ET DEL·

93

The Architectural Forum

ENTRANCE TO GARDEN, OWLPEN MANOR HOUSE, GLOUCESTERSHIRE

FRANCIS P·A COMSTOCK *Delins et del* 1926



BAY WINDOW, MAIN FACADE, OWLPEN MANOR HOUSE, GLOUCESTERSHIRE

THE ARCHITECTURAL FORUM

AUGUST

1927

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BOOK DEPARTMENT

Standard Practice in Wood Construction

THE great importance of wood construction which, notwithstanding the wide use of steel, still remains and doubtless will long remain the form of building most used in America, abundantly entitles the subject to consideration and analysis filling one entire book of a valuable work covering the entire field of modern building. Correct understanding of the principles of wood construction is fully as necessary for the architect as for the builder who actually deals therewith, and in discussing the subject the authors have borne constantly in mind the intimate relations which necessarily exist between design and construction. "The architect who aims to become reasonably well versed in the fundamental principles of structural design and detail will not so arrange a plan as to penalize the construction, but will be able to sense the usual principles and govern his layout accordingly. Likewise, the engineer should become as well versed in the general practice of the architect as possible, in order that he may wisely guide those features of the design which seriously affect his efforts toward economy, without sacrifice of beauty or serviceability.

"It is with the object of bringing about this closer coöperation that this volume is written. An attempt has been made to outline in a simple fashion those features of engineering which an architect might well command as a part of his general knowledge. In presenting these, they have been closely tied into correct architectural and engineering practice, so that not only the architect but also the engineer may profit thereby. The authors have striven diligently to emulate the latest and best practice in actual construction and have included as many recent examples of such practice as possible for the purpose of illustration. In all cases each principle of structural design has been fully analyzed."

Each detail of wood construction is dealt with in turn,—beams, second and third class construction, mill construction floor systems, roofs, trusses, columns, stud walls and partitions, etc.,—while one chapter is devoted to the subject of store front construction, giving plans.

ARCHITECTURAL CONSTRUCTION. Volume II, Book I. Wood Construction. By Walter C. Voss and Edward A. Varney. 244 pp., 8½ x 11½ ins. Price $6.50. John Wiley & Sons, Inc.

"The Spanish House for America"

By Rexford Newcomb, University of Illinois

THE undoubted charm of the simpler type of Spanish architecture is due largely to its close relation to the soil. Set close to the ground, and built as a rule of brick, stucco, adobe, or some other material directly of the soil, Spanish domestic buildings have the appearance of belonging in a particular sense to the places where they stand. The simplicity which characterizes their structure is equaled by the simplicity of their design, always given in Spain a direct, naïve quality, which the early Spanish settlers in America secured when they began colonizing and building in Florida, California, and the other regions in America where they were the pioneers. The simple grace and charm of their buildings are being equaled today, and some of the most strikingly successful of recent domestic work owes its excellence to this following.

IN this volume an architect and professor of architecture deals with the most successful adaptation of Spanish domestic architecture in the sunny parts of America where its use is most appropriate. Disregarding the extremely ornate work, where the simplicity of the type is ruined by overelaboration, he presents the American following of the early Spanish style in its most charming aspect. The work deals with the design of the house; its *patio* and general plan; its construction, decoration and furnishing; and one of the most helpful parts of the volume discusses the various forms of craftsmanship which aid in giving the strong character upon which such buildings largely depend. The volume is also helpful because of its including illustrations of the exteriors and interiors of houses built by the architects who are leaders among those successful in use of the Spanish style.

Profusely Illustrated; 164 Pages; 6¾ x 10 inches; Price $3.50

ROGERS & MANSON COMPANY, 383 MADISON AVENUE, NEW YORK

Any book reviewed may be obtained at published price from THE ARCHITECTURAL FORUM

MEXICAN ARCHITECTURE OF THE VICE-REGAL PERIOD. By Walter H. Kilham, 222 pp., 6 x 9 ins. Price $5. Longmans, Green & Co., New York.

FEW of the current works on architecture are more interesting than those which deal with that of Mexico, a land with which, as has been often pointed out, Americans are far less familiar than with almost any country of Europe. Mexican architecture, to be sure, is a bewildering blend of the various types which, since the Gothic, have prevailed in Spain,—the Plateresque, Churrigueresque and Baroque,—and the native Indian architecture which the Spanish found when they came, saw and conquered Mexico to enrich the Spanish crown. "Unlike the practice of Rome, which allowed and encouraged her dependencies such as Egypt, Judæa, Greece, etc. to continue their own language, religion, and architecture, or of England, which allows her Indian subjects, for example, full liberty of creed and culture, the Spanish colonists by force of arms uprooted and destroyed as far as possible all traces of Aztec civilization, laws, religion, and social atmosphere, replacing them fully and completely with their own." But however complete was the success with which the conquerors made Mexico very nearly as Spanish as Spain itself in the way of religion and almost everything else for which civilization stands, they fared rather less well with architecture, which has always manifested (and indeed does still) a strong partiality for Indian motifs; or perhaps the Spanish, always astute colonizers, realized that in anything so obvious and plainly visible as architecture it was the part of wisdom to incorporate some use of native forms, the result being in any case architecture of a solid and massive if not overpowering type, well calculated to impress Mexico with a sense of the virility and power of Spain.

In this volume Mr. Kilham, of the firm of Kilham, Hopkins & Greeley, sums up his impressions of Mexican architecture. With a trained eye for recognizing excellence he has selected from the various places to which he traveled old palaces, buildings which were originally palaces but are now adapted to various public uses, a few houses built possibly by Spanish or Mexican grandees, but particularly cathedrals, churches, and monastic buildings of one kind or another, for the Spanish well knew the civilizing value of Christianity, the priest and monk following closely behind the sword, and nowhere in the world does architecture bear such strong testimony to the strength and power of the Latin Church as in Spain or in lands which have been Spanish. Quite apart from the interest of its architectural matter,—illustrations and descriptions of buildings,—the volume possesses value to anyone interested in Mexican travel or in the history, the architecture, and the cultural progress of the country.

AN OUTLINE HISTORY OF ARCHITECTURE OF THE BRITISH ISLES. By P. L. Dickinson. 320 pp. 5 x 7¾ ins. Price $5. Houghton Mifflin Co., Boston and New York.

INTELLIGENT appreciation of architecture is necessarily based upon knowledge of its history. Each of many ages has produced its own architectural type or style, influenced of course by what has gone before, and influencing in its turn that which came later. Study of architecture in England possesses particular interest for the student. In the British Isles there exist buildings or at least architectural remains of all types or periods from the Roman to the Modern English, and many an old town affords opportunity of studying all the various forms which at different times British architecture has assumed. This work is admirably adapted to guide the student in such a study. Architecture of every kind which has been developed in the British Isles is given adequate attention, but particularly satisfying is the author's treatment of ecclesiastical architecture as exemplified in cathedrals or rural churches, and among the excellent illustrations are those of very early structures, —Norman or even pre-Norman,—and of such recent buildings as Liverpool Cathedral, still under construction.

ENGLISH DECORATIVE PLASTERWORK OF THE RENAISSANCE. By M. Jourdain. 258 pp. 8½ x 11 ins. Price $12 Net. Charles Scribner's Sons, New York.

ARCHITECTS and decorators well know the importance and value to interiors of modeled plaster ceilings. While the modeling or moulding of plaster is of course a craft which cannot be claimed exclusively by any one nation, it was brought to its highest (and certainly to its most interesting) point of development in England during the period which began during the sixteenth and ended during the eighteenth century, the culminating point occurring probably during the reign of Queen Elizabeth or that of James I. When Henry VIII began the building of Nonesuch there flocked into England from all parts of Europe the most skilled workers in every form of building craft. Among them, from Italy, there came plasterers who proceeded to develop their work in England on lines of the "Gothic joiners' craft," and their flat ceilings were divided by moulded rectilinear ribs, sometimes ornamented with carved and occasionally pendant bosses at intersections. With the use of a plastic material so easily worked the necessity or desirability of adhering to rectilinear forms ceased to exist, and then there began the development of strapwork, geometrical schemes, all-over floral ornament, and decoration which involved use of small repeated details, such as leaves and flowers, pressed with a die or cast and inserted. There exist even today, in old buildings all over England, a sufficient number of ceilings, friezes, overmantels and panels of moulded plaster to prove that the output of the English plasterers must have been large. In preparing this work Miss Jourdain has gone deeply into study of the subject, and the volume presents excellent illustrations of countless examples of plasterwork, the simpler as well as the more elaborate.

The modern revival of interest in all the old-time crafts which enter into building extends of course to work in plaster, and modern plasterers are producing (or easily could produce) work rivaling anything made during the period covered by this volume. For this reason, among others, the work possesses high importance, since it not only affords valuable suggestions but in many instances gives drawings of details and profiles or contours of mouldings. This applies to work of all the architectural periods in which the work of the plasterer flourished, not only the Tudor era but also that period during which the Stuarts ruled England, and the times during which plaster ceilings, though of a character quite different, were used during the various Georgian reigns.

A reproduction of this rendering by Hugh Ferriss, suitable for framing, will be mailed free of cost to any architect

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EVERY little while a new volume is added to the HOUSE & GARDEN series, which deals with houses, their exteriors and interiors, and their gardens. In this, the latest and by far the most helpful and stimulating of these volumes, there has been collected the very best of the invariably excellent matter which has appeared in HOUSE & GARDEN during the past year or two. It is a volume valuable alike to the architect, the interior decorator and the home owner, as well as to the large number of people casually interested in interior decoration.

SEVEN hundred illustrations deal with every department of the house,—entrance porches, vestibules and halls; reception and living rooms; libraries, dining rooms and kitchens; stairways; bedrooms and bathrooms; verandas and terraces, all these illustrations presenting the most perfectly planned and beautifully arranged examples, the greater part of which are of distinctly moderate cost. Other departments deal with color schemes of which a great many are suggested; with accessories, such as bookcases and built-in bookshelves; lamps and lamp shades; mirrors and other details of furnishing; and one section is given up to illustrations and text which make entirely plain the types of furniture of the different historic periods.

It would be impossible to over-emphasize the value of this work to anyone interested in its subject.

223 pages. 9¾ x 12¾ inches. Price $5.

ROGERS & MANSON COMPANY
383 MADISON AVENUE, NEW YORK

THE ARCHITECTURAL SCULPTURE OF THE STATE CAPITOL at Lincoln, Nebraska. By Charles Harris Whitaker and Hartley Burr Alexander. Text and Plates, 9½ x 13 ins. Price $10. Press of the American Institute of Architects, Inc.

THERE are certain American architects whose work might be interpreted as a record of constant development expressed in structural, tangible form,—a record in which each new work indicates a definite step in advance, a lesson learned and made the most of. Such is the thought which comes into the mind as one views —now in retrospect—the career of Bertram Grosvenor Goodhue. It is as a planner of Gothic churches that he is best known, and many exist to testify to the skill with which he handled forms which had long seemed to be lifeless and dead, but which under his skillful hand became animated with vitality. His genius and his keen observation during travels abroad seemed to endow him with intuition which spread the history, theory and possibilities of architecture out before him as a sort of panorama, and this gave him skill in adapting from various styles and many architectural periods ideas and motifs which he fused into a wonderfully beautiful and consistent whole. An instance is his work on the capitol of Nebraska, one of his latest achievements and that by which he will probably eventually be best remembered.

Goodhue was particularly fortunate in being surrounded by craftsmen who could and did enter so wholeheartedly into his plans that they became as it were Goodhue's personal exponents of ideas relating to sculpture, metalwork, glass, and even such comparatively minor details as tiling and needlework. Such, for example, was Lee Lawrie, collaborator with the architect on many commissions which might easily have been ruined had their sculpture been handled in the way which many craftsmen would desire,—in a way which made architecture a sort of framework or glorified setting for sculpture instead of keeping it an accessory,—highly important, but still an accessory,—to the mistress of all the arts; and possibly it was this understanding between architect and sculptor which gave Goodhue a keen appreciation of the fact that architecture in one sense *is* sculpture, in that the form of a structure should be designed with due observance to much the same rules which govern sculpture in regard to mass, balance, rhythm, and weight.

"The sculptor's task is in a very direct sense a legacy from the architect. Mr. Goodhue owned two convictions which had become for him virtually canons governing the employment of decoration, both of which ruled completely in his Nebraska capitol design. First was his determination that every element of decoration must be significant, that there should be introduced no ornament that is not relevant to the use and meaning of the building, and, indeed, that is not demanded by the use and meaning of the structure. In particular he detested conventional or traditional ornament employed merely to give the appearance of finish, or but to satisfy the prejudiced expectation which tradition fosters. Second, and here assuredly it was the spell of the ancient Orient that counted for most, the architect demanded not that the building should make place for sculpture after the manner of pedestal or frame, but that the carven stone, whether image or inscription, should be of the substance of the building, wrought at those points where relief could clarify the architectural

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form and rendered wholly within the structures and surfaces of the edifice. Thus, inscriptions fulfill the function of cornice ornament; engaged figures emerge as the natural completion of pylonic masses, tablets are set into the crests of pavilions and upon the cheeks of balustrades, and the sparse lesser ornament occurs only where the eye requires some restful interruption. It was within the limits defined by this architectural creed that the sculptor received his commission. He was to do for the building all that carved work could do to illuminate its sense, and he was to do this in such a manner that his images should, as it were, voluntarily subordinate themselves to the architectural outlines. There was to be no obtrusion of the images for their own sakes, no self-proclamation; they were to rest quietly within the stones from which they were cut, speaking only when a natural call for light drew them into the focus. Sculpture is intrinsic within the Gothic, but for this very reason, perhaps, it is likely to become insubordinate, being held in place only because the whole idea of Gothic buildings is sculpturesque; the carven image is text, not punctuation. In the Classic, sculpture is but an added grace; even the Parthenon pediments impress one less by their inevitability than by the genius which could adapt such a theme to such a position, and they lead not into the *cella* of the goddess but into Olympian myth. The Nebraska capitol is neither Gothic nor Classic; it is of a new architectural style; and in the problem of its sculpture, which was to be more temperate than in the Gothic and more intrinsic than in the Classic, the architect opened out to the sculptor an adventure in style."

This volume deals exclusively with the Nebraska capitol and with its ornament, which, though not complete, may be judged with some idea of its importance.

SPANISH INFLUENCE ON AMERICAN ARCHITECTURE AND DECORATION. By R. W. Sexton. 263 pp., 9 x 12 ins. Price $10. Brentano's, New York.

THE present widespread vogue of Spanish types of domestic architecture has brought with it a considerable number of works which deal with their characteristics and contain illustrations of American architecture developed in a following of the Spanish styles. American architects have in countless instances used the type for developing large country estates, chiefly in such sunny and balmy parts of the United States as California and Florida, and it has likewise been used for many large hotels and country clubs in the same localities. This has in fact been done to such an extent that the large work might be said to form a class by itself, while the work of lesser extent (often, it is true, showing a closer adherence to type) may be said to form another. This volume, as one turns its pages, impresses one as dealing chiefly with work of the former nature. It illustrates buildings of several types,—residences, clubs, hotels and a few apartments,—mostly of large extent and chiefly of a florid and luxurious nature which one feels is scarcely appropriate to a type as essentially simple as the Spanish. Perhaps the architects were prevailed upon by their clients to supply splendor without regard to the fitness of things. The author pays considerable attention to craftsmanship in the various forms which play a highly important part in all Spanish architecture.

A Notable Work on English Architecture

THE most popular and widely used type of architecture in vogue in America today is unquestionably that version of the English Renaissance used during the reigns of George II and George III—or rather the American adaptation of the current English style which is now known as "late Colonial." A correct understanding of the Colonial of this period is best had by studying the prototype from which it was evolved, the work of the great English architects who formulated the style which has ever since been representative of England's best. Mr. H. Avray Tipping gives a lucid and comprehensive history of the work of many famous architects of that time, among them the Adam brothers, who stand out prominently. They were the first to differ from the Palladian pedants and Rococo designers, and the architectural development of the Adam brothers had a profound effect.

THIS is a volume newly added to a monumental work on English architecture. Earlier volumes deal with the Tudor, Elizabethan, William and Mary and Queen Anne types, while in this volume the author sums up the architectural progress which culminated during the reigns of the later Georges. The work is replete with illustrations of exteriors and interiors, of great country houses as well as of manor houses and certain minor buildings which afford precedent for use in America today. It fittingly completes a comprehensive treatment of an important subject. It is a volume which in its usefulness will be of great value to architects whose work involves much use of Georgian design. To the student of English architecture it is necessary to complete his library dealing with design in the Tudor, Elizabethan, William and Mary and Queen Anne periods. It is superbly illustrated.

ENGLISH HOMES; PERIOD VI—VOLUME I

Late Georgian, 1760-1820 *By H. Avray Tipping, M. A., F. S. A.* 402 pp., 10⅜ x 15¾ ins. Lavishly Illustrated. Price $25

ROGERS & MANSON COMPANY, 383 MADISON AVENUE, NEW YORK

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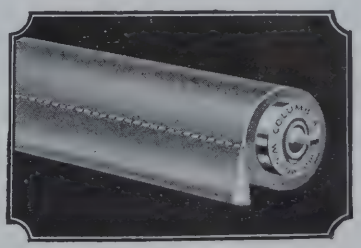

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The ARCHITECTURAL FORUM

VOLUME XLVII — *Established 1892* — NUMBER 2

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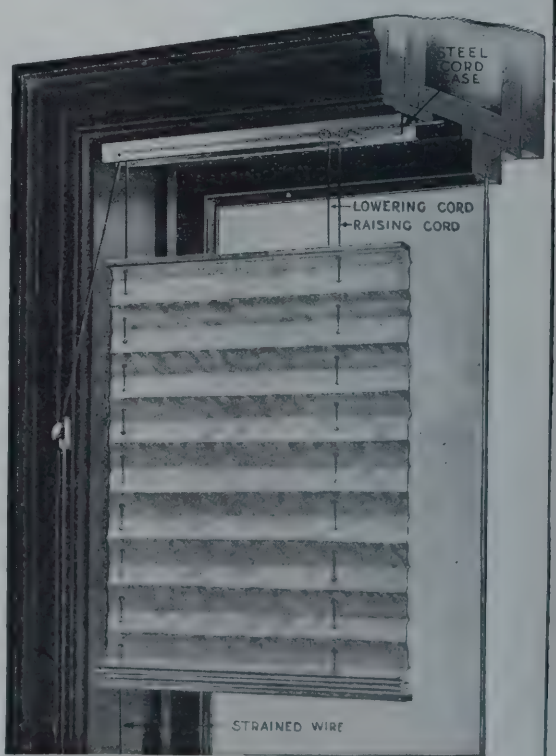

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THE EDITOR'S FORUM

AMERICAN SCHOOLS OF LANDSCAPE ARCHITECTURE

SINCE the School of Landscape Architecture was established at Harvard University in 1900 there have been many similar courses established in other universities, and instruction in this subject has made rapid strides. Today there are about 20 schools offering full courses of instruction leading to a bachelor's or master's degree. While there are several schools that are open to men only, there are several open only to women. The majority, however, are coeducational. In many instances these schools have been established in departments of horticulture or floriculture, just as architectural schools have been placed under engineering, but through the influence of the National Conference on Instruction in Landscape Architecture the tendency today is to place these schools in divisions of fine arts, as at Cornell, where architecture, fine arts and landscape architecture are in the School of Architecture, and as at Pennsylvania, where these same departments, together with a department of music, are in the School of Fine Arts. At Harvard the Departments of Architecture and Landscape Architecture have always been independent of the other departments of the University, but have always worked in close coöperation, and the tendency with all the leading schools such as Michigan, Illinois, Ohio State and Iowa State is toward coöperation between these two closely allied courses of study.

At its meeting last year, the National Conference on Instruction in Landscape Architecture approved the five-year undergraduate course. It is believed that this will tend to make easier coöperation between the allied professions of architecture and landscape architecture, since today our architectural schools are adopting five-year courses. Just as the American Academy in Rome established its Fellowship in Landscape Architecture in 1914, with the idea of having representatives of all the arts at their institution, so too in time it is hoped to establish similar close coöperation between the students in universities. In no two professions is coöperation so important as between architecture and landscape architecture, and the beneficial influence of having students in these courses working and playing together in universities will become apparent in years to come when these men are practicing their professions and continuing the pleasant relations and understandings that they established when they were undergraduates. This association would redound to the advantage of these professions, the members of which are necessarily brought into close relations.

RECENT PRIZES IN ARCHITECTURE AT PRINCETON UNIVERSITY

THE program for the 1927-28 competition for the Princeton Prizes in Architecture called for the designing of a memorial group of buildings on a university campus, the group to consist of an auditorium, a library, an art museum and a tower, arranged about a quadrangle dedicated to the Liberal Arts. Drawings submitted were of an unusually high quality and indicated an excellent grasp of the problem. The prizes were awarded to Martin L. Beck, of New York, and John A. Nelon, of Watertown, Mass., and honorable mentions were awarded to Alan C. Davoll of New York, and Harry Gulesian, of Ashmont, Mass. The prizes amount to $800 each, and entitle the winners to spend a year in the advanced class of the Princeton School of Architecture. The Jury of Award, which met at Princeton on June 16, 1927, consisted of Messrs. Corbett, D'Amato, Githens, Licht, and Morgan.

AN HONORARY MEMBERSHIP

AT a recent banquet given by the Chicago Chapter of the American Institute of Architects, an honorary membership in the Institute was presented to Charles H. Wacker, for 18 years Chairman of the Chicago Plan Commission, and one of the directors of the World's Columbian Exposition in 1893.

A MEMORIAL THEATER

THERE has been opened a competition for designs for the new Shakespeare Memorial Theater at Stratford-on-Avon to replace the structure destroyed by fire in 1926. Details regarding the program may be obtained from the Secretary of the Shakespeare Memorial Theater Association, 150 Nassau Street, New York. The site which has been secured for the new building is an enlargement of the old site on the banks of the Avon. The destroyed theater, of which only the ruined walls remain, stood between the Avon and the road leading to the church where Shakespeare is buried. The selection of a design has been placed in the hands of the Royal Institute of British Architects. The judges of the competition will be E. Guy Dawber, President of the Royal Institute of British Architects; Cass Gilbert, President of the National Academy of Design of the United States; and Robert Atkinson, Director of Education for the Architectural Association. It is the hope of those in charge that the citizens of all English-speaking countries will unite to secure in the rebuilt theater at Stratford an appropriate and practical memorial to the greatest of English poets.

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To Architects

$15,000,000 annually for office changes to meet the demands of new tenants and old—that is the tax which building owners throughout the country are paying, according to a survey made by Mr. George R. Bailey, research engineer for the National Association of Building Owners and Managers. Now architects, owners and managers have found a way to reduce this tax. A brief description of this proven method and the important part played by office partition, is detailed in this article.

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BOURGES CATHEDRAL FROM THE SOUTHEAST

From a Water Color by Otto F. Langmann

The ARCHITECTURAL FORUM

Volume XLVII AUGUST 1927 Number 2

The Stevens Hotel, Chicago

HOLABIRD & ROCHE, Architects

By HENRY J. B. HASKINS

FEW of the great cities of the world are so situated that their principal thoroughfares present unbroken fronts to wide open spaces or waterfronts. Perhaps Edinburgh, Stockholm and Shanghai are chief among those favored cities which are comparable with Chicago in the settings they afford structures erected on their main thoroughfares and in their most commanding positions.

The waterfront of Chicago is destined, when fully developed, to be one of the most beautiful city parks in existence, and fortunate indeed are the buildings which face upon it. Michigan Avenue, in one unbroken sweep of considerably over a mile in length, enjoys this advantage; the block upon which the Stevens Hotel is erected is only just a little to the south of the center of the park, and as a result it enjoys to the fullest degree all of the benefits this great civic development affords. Situated on the front portion of the entire block bounded by Michigan Avenue on the east, Wabash Avenue on the west and Seventh and Eighth Streets on the north and south, the Stevens Hotel is ideally located in relation to the ultimate development of Chicago, as outlined by the Chicago Plan Commission, in its freedom from noise, and it is immediately accessible from the avenues of communication leading to and from all parts of the city. It is in the very heart of Chicago.

From a view of the building obtained during an automobile trip along Chicago's outer drive, one is able to appreciate to the fullest extent the advantages enjoyed by the Stevens Hotel in its location. Here also one is forcibly impressed with the magnitude of the undertaking, and with the great beauty of the results obtained. It will be apparent that designing the exterior of this building presented a problem quite different from that usually met with in designing the average Chicago structure, which is hidden in the labyrinth of streets and depends upon its height for the amount of skyline exposed to view. The Stevens Hotel presents its magnificence to the world in a bold and straightforward manner, without ostentation, and it is free for all time from the possible obstruction of neighboring structures, which mars so many notable buildings.

To the observant eye, the disposition of the major spaces of the building is clearly discernible, and this fact is perhaps one reason for the success of the design. The base, below the level of the courts, is of limestone with a sub-base of pink granite. Into this sub-base open the fronts of the shops which occur on the ground floor of the hotel. These shop fronts, which have ornamental cast iron frames, have been kept quite subordinate in their areas to the rest of the granite sub-base, giving full architectural value to the granite as supporting the structure. This is possible, since the shops are not commercial in the ordinary sense, but are primarily included in the layout to supply the needs of the guests of the hotel, who, it must be remembered, are as numerous as the inhabitants of a town of many thousand population,—almost a small city.

In the stone base of the building are incorporated the lofty and dignified windows lighting several of the larger units on the second floor level, including the main dining room, lounge, main ballroom, etc. Viewed from the exterior, on the Michigan Avenue front, this array of balconied windows, 400 feet long, is tremendously impressive, the windows affording a fine view at all times, and on gala occasions offering a close-up view of parades and the like. The shafts of the pavilions are of brick, penetrated in a regular, rhythmic and patternlike manner with uniformly sized windows, expressive of exactly what they are,—a grouping of thousands of bedroom windows so deftly arranged that no one room would appear to have the advantage over its neighbors in light, air and view, but rather that all enjoy them to the fullest degree. The exterior treatment is carried around all the walls of the structure, and the fire escapes are successfully placed on the alley at the rear of the building, wholly out of sight.

The upper portion of the structure, embracing three stories, is almost entirely of limestone, architecturally completing each pavilion as an individual unit, and also tying together and unifying the building as a whole. This unification of parts is further emphasized by the introduction of superimposed structures, including a promenade around the center portion of the building and an imposing tower over the center block where, among other things, there will be located a radio studio, for broadcasting through a remote-control station. In a structure of

this kind more than of any other is the exterior design influenced by the practical arrangements of the plan, and here the great mass of the building, public in character, called for a quiet dignity of expression, which should be satisfying and secure for all time against passing architectural fads and fancies. The motifs used throughout the exterior have been taken from the French periods of architecture,—Louis XIV, XV and XVI,—and they have been very freely though very carefully used, producing a building the exterior of which is imposing, yet dignified, commanding yet inviting, colossal yet refined, in all ways appearing to be just what it is,—a worthy addition to the ever-increasing number of Chicago's beautiful and practical buildings, and in its own field a structure that is second to none anywhere.

Anyone can very readily appreciate the gigantic task involved in the planning of such a city in a block, as indeed the Stevens Hotel is. Conceive of a jig-saw puzzle of some 5000 parts to be sorted and shifted, correlated and arranged, until a perfect working whole is produced, and a slight idea of the difficulty can be imagined. As with a puzzle, units of similar sizes and intended for similar uses belong together, and the 2810 typical bedroom units offered the logical point at which to commence the arrangement of the plans, which required the greatest skill.

It is interesting to know that over 10,000 distinct and individual drawings were made for the erection of the hotel. In the early stages of the planning, installation of two separate groups of elevators was proposed, and more wings or pavilions were indicated. Gradually, by a process of elimination and improvement, the plan crystallized around a centrally controlled group of elevators opening onto the 400-foot corridor which traverses the entire length of the hotel, and off which four transverse corridors lead to the individual pavilions. A considerable amount of possible room accommodation was sacrificed to permit of the extra wide courts which now provide an abundance of light and air to all rooms and offer to the majority of the rooms an uninterrupted view over Lake Michigan almost to the Michigan shore.

Each of the typical floors is controlled by a floor clerk located at the end of the elevator lobby and having complete observance of all incoming and outgoing guests, and who is in touch with every activity of the hotel by pneumatic tube systems. Adjacent to the desk of each floor clerk is a reception room for visitors' use. It is interesting to note that in order to arrive at the best possible results in bedroom arrangement, several model bedrooms were erected at the LaSalle Hotel, with bathrooms, closets and furnishings complete in every possible way.

The early studies determined the placing of the public rooms on the lower floors, avoiding placing too heavy a tax on the elevators, affording easy accessibility and concentrating rooms for public functions and the various utilities connected with them. The main entrance to the hotel, centrally

Photos. Tebbs & Knell, Inc.

Elevator Lobby, Second Floor, Stevens Hotel, Chicago
Holabird & Roche, Architects

situated on Michigan Avenue, opens through the east corridor directly into the grand stair hall, or by a turn to the right or left to the office lobby or the south lobby, affording general access to all parts of the house. The Seventh Street doorway, or what might be called the entrance from the "loop," opens almost directly into the office lobby, with ready access to the Colchester Grill, the basement lunch room, toilet rooms, and other departments that are arranged at this end of the building. The Eighth Street doorway may well be termed the "social" entrance to the hotel, giving direct access to the unusual and complete facilities of the banquet check room, to the grand banquet hall above, and to the enormous exhibition hall below. Both of the latter spaces, in addition to the assembly room and lesser banquet halls of the third floor, are arranged to function together, and can adequately take care of the largest of public gatherings. The kitchens, it will be noted, are placed at the rear center of the plan, and are arranged to give service in all directions to the various rooms grouped around them.

Entering the hotel through the bronze glazed doors of the Seventh Street entrance, one passes through a spacious vestibule to a wide corridor leading to the office lobby. The vestibule and corridor have the walls lined to their full height with red marble; the floors are gray marble in pattern, and the ceilings are of beautifully modeled low-relief ornamental plaster, vaulted and decorated in cream and gold. From the corridor, entrance is afforded to the corner store through a bronze finished doorway, flanked with unique individual show windows. An interesting feature is the grouping of house telephones, arranged in recessed marble niches framed with ornamental bronze frames. The entrance lobby to the Colchester Grill is finished in plaster in Louis XV style, lined with mirrored doors, and decorated in black, gray and gold, while off the lobby are located a check room and a women's reception room which are finished alike in a rich and warm gray.

The table d'hote dining room, which has been given the attractive name of the "Colchester Grill," should delight the eyes of all those restless individuals forever demanding something new. A most engaging vista is had from the short flight of steps leading down to the room. Here we find an ultra-modern treatment that will satisfy the most exacting taste. The columns, which are enclosed with black and gold marble, contain mirrors with elaborately ornamented and gilded frames. The ceiling is vaulted in plaster with ornament radiating from the columns along the intersecting lines of the vaults. The floor is of a gray marble in patterns. The walls are skillfully lightened in effect with framed mirrors, a continuation of the window treatment around the inside walls, and the ornamental grilles and other details give a highly architectural character to the general scheme. The room is in every sense a daylight room and is 65 by 80 feet in its dimensions.

Elevator Lobby, First Floor, Stevens Hotel, Chicago
Holabird & Roche, Architects

Crossing the east corridor, the visitor to the hotel enters the great stair hall and is impressed by its grandeur and magnificence. Here indeed is the *piece de resistance* of the building, the very heart of its architectural glory, directing with a gesture the royal road to the great public spaces just above. From the floor, which is interestingly patterned with gray and black marbles, the stairs lead on either side in a series of flights, terraces and landings to the main dining room and lounge level. This great stair hall is 46 feet wide by 140 feet long, and is of immense height. The stair treads are gray with an interesting use of black marble in the risers. The hall is interestingly designed in the Louis XVI style after the stone stair hall of the Petit Trianon. The walls are of Roman travertine in which the holes peculiar to this material have been filled with cement. The lower portions of the walls are rusticated, forming a support for the pilasters and columns of the arcaded treatment of the upper portion. This in turn carries a plaster ceiling having the decorations in a wood finish characteristic of this style, richly decorated in dull gold, and with the large panels given a conventional open sky treatment with flying figures after the manner of this period. The effect is heightened by the use of hammered wrought iron balustrades in the openings on the second floor level, and iron railings for the stairs and within the arches.

On the west side of the Eighth Street lobby, two openings afford entrance to the banquet check room. and this is probably one of the largest installations of its kind; there are facilities for taking care of 3000 guests with ease and dispatch. The various spaces are attractively fitted up, have black marble counters, and are decorated in blue and gold. Off this section are 12 dressing rooms and also 12 other rooms off the south parlor. Each room has its lavatory, dressing table, etc., and is a complete boudoir in itself. The men's cafe is readily accessible from the west corridor, but at the same time it is separated from it by a lobby on either side of which are a check room and cigar counter. This insures that privacy which is considered to be so essential in this sort of a room. The walls, columns and the ceiling beams are paneled with sand-blasted, quarter-sawed oak, designed in a very restrained version of the Louis XV style. The ceilings of plaster are finished in a warm buff, and the floors are gray and black marbles. The room has an attractive chimneypiece, and is warm, inviting, and in every sense a real men's room,—a highly successful men's restaurant.

Off the west corridor, in connection with the banquet check room, is the banquet hall staircase leading to the grand ballroom foyer on the second floor. This has marble treads and risers and wrought iron railings, and it winds up past three paintings set in the wall panels which were designed to receive them.

If only by virtue of its size, the grand ballroom is the most important. It is located on the second floor of the hotel, fronting on Eighth Street and

Pompeian Room, Stevens Hotel, Chicago
Holabird & Roche, Architects

Michigan Avenue. The hotel entrance specially arranged for use in connection with the grand ballroom is located on Eighth Street and opens onto a spacious lobby off which are arranged checking facilities. The checkrooms, of course, afford every possible convenience in the way of toilet accommodations, individual dressing rooms, etc., while the hairdressing rooms are immediately adjacent. From the check room entrance is obtained immediately to the lobby containing the banquet hall stairs, affording easy and direct access to the assembly room on the second floor, from which the grand banquet hall is reached. The main bank of passenger elevators is immediately adjoining the assembly room, which is also directly approached from the writing room, the lounge and the grand stair hall. From the assembly room many openings give entrance to the grand ballroom, which is a little more than 80 feet wide by approximately 165 feet long and 35 feet high. The floor area is approximately 14,000 square feet. There is a balcony about 8 feet wide extending around the room. The seating capacity for banquet purposes is 3,000. The grand ballroom has an oak parquet floor on the main floor and a rubber tile floor on the balcony. The walls are lined with marble from the floor to the under side of the balcony, and there is a base of the same material around the balcony, protecting the decorated walls.

The lighting of the room, in addition to wall fixtures, is afforded by ten exquisitely designed large crystal chandeliers, designed by Vian of Paris, and some of these are ingeniously grouped at the center of the room in such a manner that with the use of wall hangings, suspended from hooks in the ceiling, the center portion of the room can be enclosed in the form of a small but perfect theater. This arrangement makes use of the speaker's platform at the side as a stage. A motion picture booth is provided, using a full-sized theatrical silver screen. Hooks are provided in the ceiling for the support of anything that it may be desired to hang, and the floors are sufficiently strong for the display of the heaviest truck, automobile, or machinery, any of which can be easily brought into this space. Ordinarily the room is one large open hall, capable of housing a circus if necessary, but arrangements are made for its division into areas for approximately 98 exhibition booths, with the necessary circulation spaces; each booth space is supplied with live steam, gas, electricity, air and all possible mechanical requirements for any kind of exhibit likely to be held.

The main dining room is a room of fine dignity. It is approached from the north end of the grand stair hall through an entrance lobby opening into the raised portion of the room on the west side. This side of the room is connected with the lower level, which parallels Michigan Avenue, by two broad flights of steps, flanked with gray marble abutments. The two levels are separated by a pilastered arcade running the full length of the room, the openings

Lunch Room, Stevens Hotel, Chicago
Holabird & Roche, Architects

between which are enclosed by balustrades. Thus the patrons in the upper level will enjoy the same superb outlook toward the lake as those on the lower. The style used is that of Louis XVI, and is carried out mainly in plaster with bases and subbases of verde antique marble. Between the windows the walls are treated with mirrored panels, surrounding the crystal lighting fixtures and surmounted by painted panels in the manner characteristic of the period. The floor is laid with gray marble squares, separated by white marble bands, and the room is decorated in gray and gold and hung with rose silk hangings. An atmosphere of refined architectural solidity and permanence is given to the room by the use of the arcaded dividing wall and the long row of free-standing supports.

BOSTON PUBLIC

Telephone Lobby, Stevens Hotel
Holabird & Roche, Architects

The "controlling brains" of the hotel occupy the fourth floor of the center pavilion, and the accommodation for them is necessarily ample. Here we find the manager's office, with rooms for his secretary and stenographers, the assistant manager, maitre d'hotel, convention manager, and directors. A large area is given over to the booking office, auditor's office, waiting room, paymaster, employment office, vaults, and all the other necessary adjuncts required to complete what might be the City Hall of the Stevens City. The walls of the manager's office are finished with light oak paneling, and those in the directors' room in dark oak. There is a very spacious library finished in walnut paneling, fitted with racks and shelving, and affording a pleasant lounging place for guests of a literary turn of mind in which to keep in touch with the latest books. The room has a capacity of approximately 15,000 volumes. Sample rooms for the use of commercial salesmen occupy most of the remaining fourth floor level, and mention should be made of the telephone exchange, which is necessarily extensive to handle the vast number of calls which will be made into and out of the hotel in even a single day.

Each of the typical floors contains approximately 140 rooms, and all open from spacious corridors which are heavily carpeted, with painted paneled walls and corniced ceilings. All rooms enjoy ample light and view, and have bathrooms and closets in connection. Suites are arranged at the ends of the pavilions. The rooms are variously decorated, with paper and paneled walls, and are variously furnished.

Opening from the north corridor, and almost directly from the stairway, there is a decidedly attractive and unusual lunch room capable of seating 200,—"tea garden" would perhaps be a more appropriate name, as it is a veritable Japanese fairyland. The pilasters around the room are characteristically painted in harmony with the walls, and frame beautiful painted panels. The green in the rubber tile floor, and in the verde antique marble counter tops forms a delightful contrast to this colorful effect. The counter fronts are quietly treated with royal gray marble. The glass lighting fixtures and the solid bronze seats form delightful adjuncts to this attractive oriental setting.

From the south ends of both east and west corridors steps lead down to what is the largest exhibition hall so far constructed in connection with a hotel. This vast area affords over 35,000 square feet of exhibition space, and the arrangement of the columns suggests a series of vast halls directly connected with one another. There is area for 159 booths, approximately 10 by 10 to 10 by 12 feet. The booths are equipped with cabinets, containing power, telephone, hot and cold water, high-pressure gas and all equipment necessary for various kinds of exhibition purposes.

The interesting feature of the roof is the long arcaded promenade, tile paved and extending approximately three-quarters of the entire length of the building, or 280 feet. This is entirely of limestone; it is roofed in, but open at the sides. This is one of the finest roof gardens anywhere to be found, and by a stretch of the imagination one can conceive of being on a gigantic airplane, headed for the Michigan shore, clearly discernible on a clear day. Rising above the promenade, the center portion is carried up four floors in the form of a beautiful tower, the crowning feature of the entire design. Among the many suggestions for the use of the space this tower affords, is included a radio studio, to be connected by remote control with a broadcasting station. The Stevens Hotel represents the utmost development to which the modern hotel has been brought. Every detail of the structure is the last word in planning, design, building, and mechanism.

ENGINEERING DEPARTMENT

Structural Design of the Stevens Hotel

By BENJAMIN B. SHAPIRO
Structural Engineer, Holabird & Roche, Architects

IN years gone by the large and special rooms of hotels were placed on the upper floors, or had open courts above them, and the problems of the structural engineer were comparatively simple. It was found, however, that these rooms must be placed on the lower floors in order to prevent interruption in the normal operation and service of the hotel. The problems of the structural engineer are thus greatly complicated, and it was necessary in the case of the Stevens Hotel for him to work with the architects from the beginning while the sketches were in the rough or preliminary stage and at 1/16-inch scale.

In this hotel the most difficult problem was that of providing girders and trusses over the large public rooms. Of the 300 columns, only 123 extend from the roof to the foundations. That means that practically all the interior columns have to be supported on girders and trusses. It was apparent that the design of the typical floor construction was to be the controlling factor in the design of the heavy truss and girder work. Many designs of typical panels were worked out and analyzed as to weight and cost. It was finally decided that slab and joist construction carried by steel girders should be used. It was found that there was a saving in using this type rather than a floor construction which would give a flat surface for the ceiling. This was due to the saving in structural steel which more than made up for the increased cost of plastering. The floor construction was designed with every partition taken care of locally and not figured as a distributed load over the floor area. Every joist was designed in accordance with its actual load, and every girder was designed for the actual reactions of the joists upon them. Wire mesh was used in all floor slabs so as to have a sufficient amount of temperature reinforcing at close spacing and because of the thin slabs used.

All girders and trusses carrying columns are located between the fourth and sixth floors. Many different types of girders are used, from the single web girders, 132 inches deep, occupying a complete story height, with openings through them for corridors, to shallow double-box girders 30 inches deep.

The framing of the grand ballroom or banquet hall was one of the most interesting as well as the most difficult of the problems faced by the structural engineer. This ballroom is approximately 85 feet by 169 feet in the clear,—with its floor at the second floor level of the hotel and its ceiling at the height of the fifth floor. Girders and trusses were introduced to carry the immense load of 21 typical floors of hotel rooms above this ballroom, not to mention the attic and roof. The great trusses designed to carry this terrific load are placed about 35 feet on centers, and each has a span of 86 feet and a depth of 31 feet, center to center of the chords, making it three stories high. Each truss carries a load of approximately 10,000,000 pounds, each supporting 5 columns directly and 13 columns indirectly. Due to the location of these columns, an unusual unsymmetrical truss design was necessary, and a combined pin-connected and riveted truss was adopted to meet the unusual conditions and take care of the corridors.

A glance at the accompanying figure will show the unusual nature of this truss and the ingenious and logical way in which the whole problem was finally solved. The peculiar construction shown at the right of the diagram was made necessary by the corridor which runs through at this point. A saddle of plates and angles is here made to hang from the end pin with two vertical hangers, giving sufficient clearance to straddle the corridors of the fifth and sixth floors. The bottom of the hangers is not connected to the bottom chord, but a stirrup is formed at their lower ends to prevent sagging in the tie-bars.

Some idea of the size of this truss is gained when one realizes that the pins in the top chord at an end post are 16 inches in diameter, over 4 feet in length, and weigh approximately 4,000 pounds each. The direct stress in the top chord of the truss is 3,660,000 pounds, besides a uniform load of 5,700 pounds per lineal foot. This necessitates a cross section area of 291 square inches. The tie-bars at the northern end of the truss have a cross section area of 192 square inches to take a direct stress of 3,000,000 pounds. The supporting of these four immense trusses was also an interesting problem. They are carried on columns 77 feet in length, built up of plates and angles with longitudinal and horizontal diaphragms. The total load carried by these columns varies from 7,000,000 to 8,000,000 pounds and requires a cross sectional area of 500 square inches. Each column was fabricated in one piece weighing from 70 to 90 tons, and measuring approximately 48 by 54 inches, as it was found impossible to design a suitable splice to be made on the site that would adequately take care of the bending of the columns.

Particular attention was given to the design of the

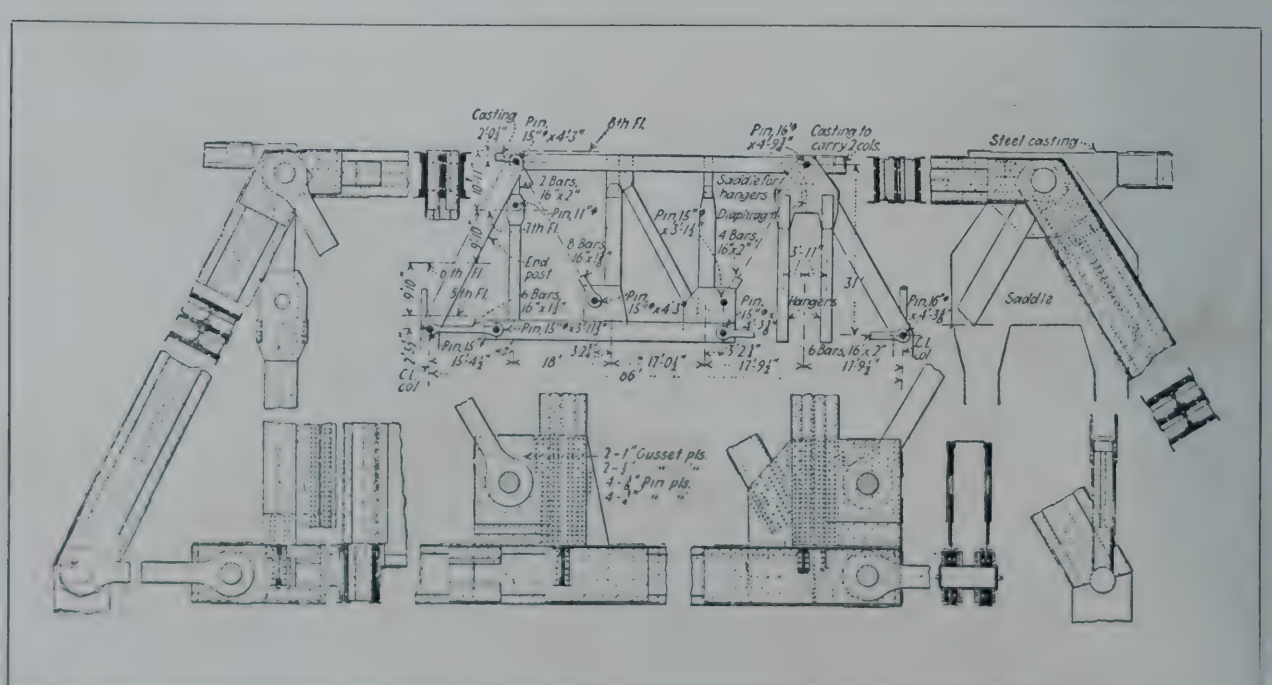
intermediate floors framing in between the trusses. Between the center pair of trusses, and between the other two trusses and the outside walls, plate girders 132 inches deep were framed in at the fifth story. These girders each carry two interior columns and act as ties between the bottom chords. Between the center pair of trusses and the two exterior trusses plate girders were framed to form the roof over the ballroom, and between the trusses at the north end, inverted trusses two stories high were framed.

All columns rest on rolled steel slabs for base plates, these slabs varying in size from 20 inches square by 2¼ inches thick to 42 inches square by 5 inches thick where square plates are used. The larger columns required round steel slabs as large as 94 inches in diameter and 11½ inches thick, round slabs being used so that there would be no difficulty in setting them in the caissons. Wherever a load on a caisson exceeded 2,000,000 pounds a 1:1:2 mix was used for the concrete which effected a considerable saving. The soil conditions in Chicago near the lake demanded special caisson work for the foundations. Due to the conditions found in sinking the test caisson, it was decided that no hardpan caissons should be used for any columns. It was even necessary to sink rock caissons to support the retaining walls around the building which do not rest upon the building caissons. Special details had to be worked out for the construction of these deep retaining walls. Instead of the usual wood drums and screws against wood walers, there were designed special steel drums against steel walers. By using these the formwork of the retaining walls could be built and the reinforcing placed for the total height of the walls. Then pouring the walls in one operation removed any danger of water leakage through construction joints, as the steel drums and walers were left in place and encased completely in concrete. The foundation wall runs down as far as 65 feet below grade. With this deep sub-basement work came the problem of taking care of the horizontal thrust of the walls due to the soil conditions.

In order to take care of this thrust, the basement floor was designed as one great two-way concrete slab, 18 inches thick, that transfers the stress from one wall clear through the building to the other wall. For the first sub-basement floor a 10-inch concrete slab was used resting on steel, or in some places upon reinforced concrete girders. This whole system of substructure was, therefore, made self-sustaining, supported only on columns and caissons, as it was not advisable to depend upon the poor soil for the carrying of any floor load. To support the five Westinghouse generators, each producing a floor load of 2,500 pounds per square foot, a special reinforced concrete flat slab was designed to withstand vibration.

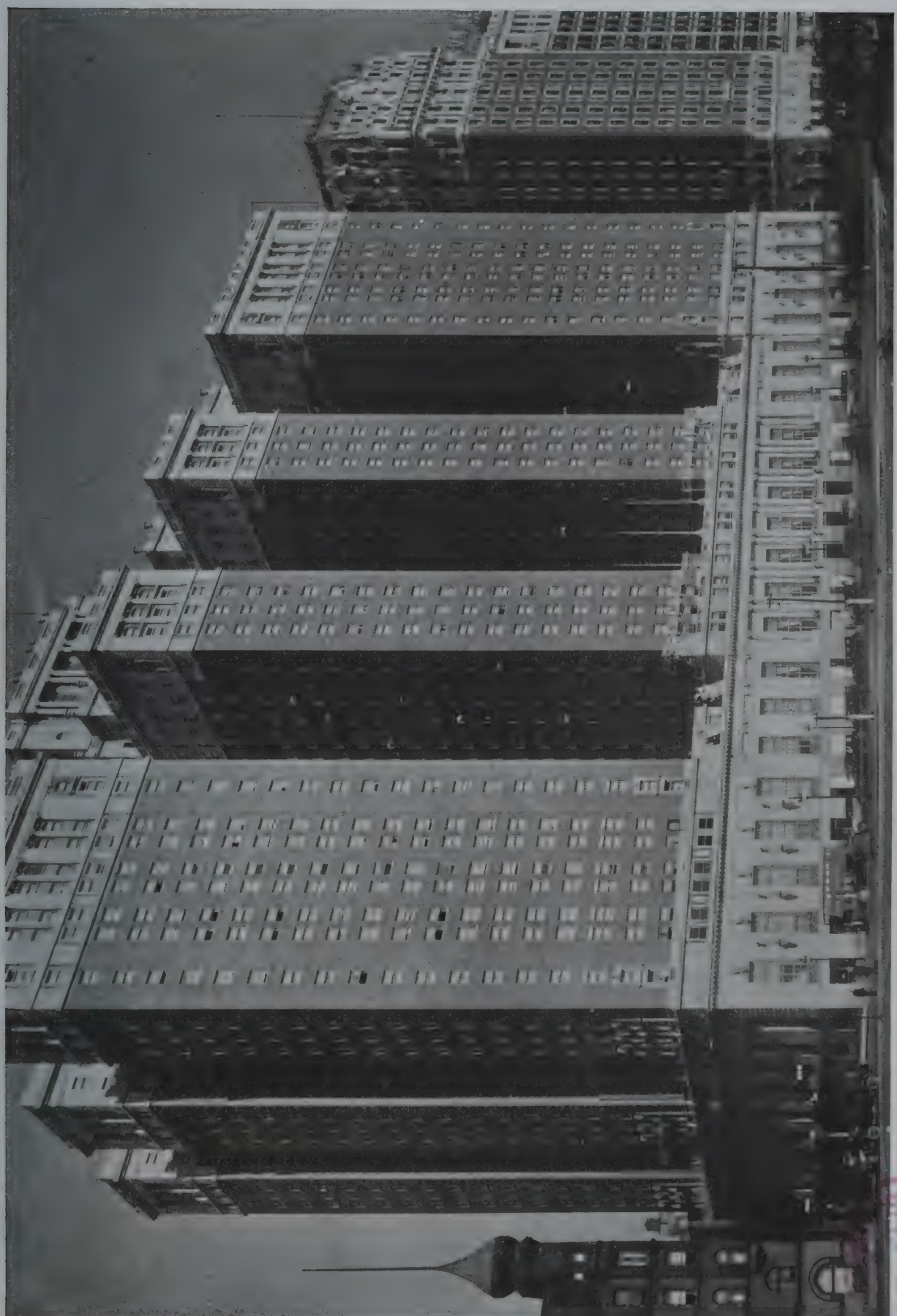
The fireproofing of all the structural steel in the building was accomplished with a 1:2:4 mix of concrete, and even the various girders and trusses were so fireproofed. In the case of the large trusses, each member was first wrapped with very fine mesh and 4 inches of concrete was poured around the outside of the mesh. The mesh was used with the columns also.

In the engineering of a building of such magnitude as the Stevens Hotel, it was necessary that the structural engineer take into consideration the various mechanical and electrical problems in order to coördinate his work with that of the other engineers to produce an efficient and serviceable structure. From the beginning and throughout the entire work the close coöperation of the engineers with the architect and owner insured the success of the undertaking.



Truss Designed to Carry 22-Story Superstructure, Stevens Hotel, Chicago

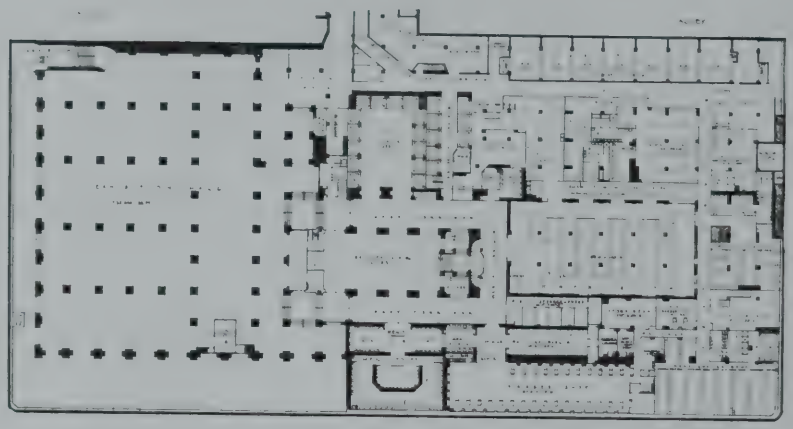
Holabird & Roche, Architects



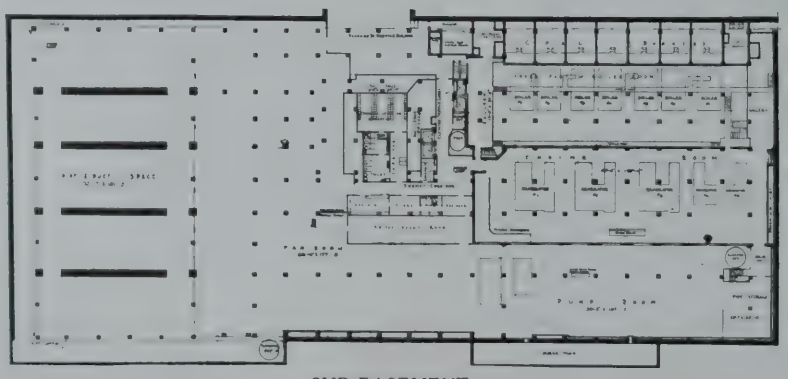
Plans on Back

STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

Photos. Tebbs & Knell, Inc.



BASEMENT



SUB-BASEMENT

PLANS, STEVENS HOTEL, CHICAGO

HOLABIRD & ROCHE, ARCHITECTS

DETAIL, STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

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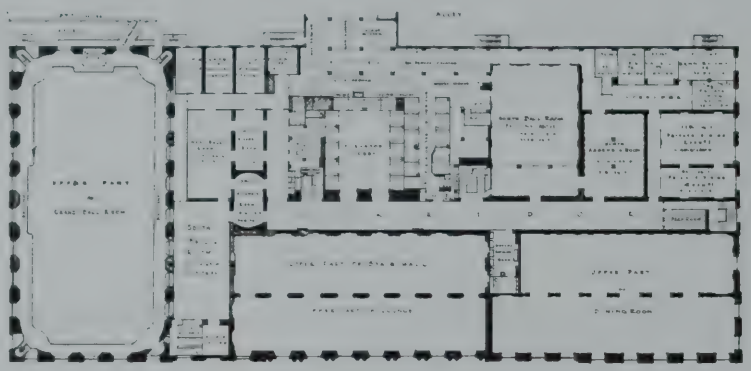
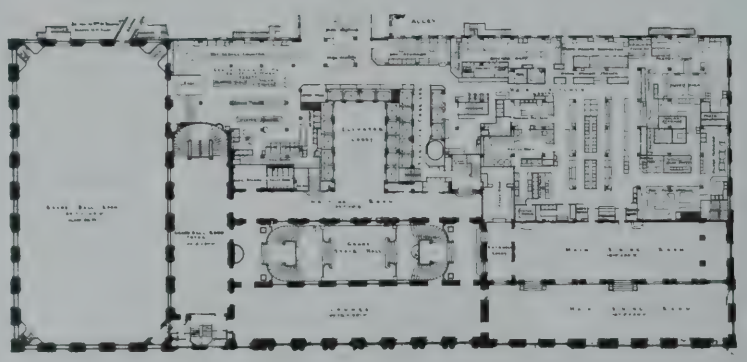
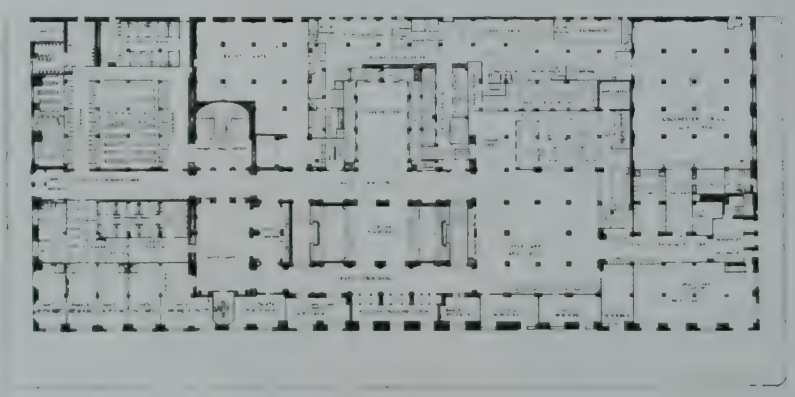


THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

PLANS, STEVENS HOTEL, CHICAGO

HOLABIRD & ROCHE, ARCHITECTS

STAIR HALL
STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

A TYPICAL FLOOR

FOURTH FLOOR

PLANS, STEVENS HOTEL, CHICAGO

HOLABIRD & ROCHE, ARCHITECTS

MAIN DINING ROOM
STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

MAIN LOUNGE
STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

DETAIL, GRAND BALLROOM
STEVENS HOTEL, CHICAGO
HOLABIRD & ROCHE, ARCHITECTS

NORTH BALLROOM

MAIN ASSEMBLY ROOM

STEVENS HOTEL, CHICAGO

HOLABIRD & ROCHE, ARCHITECTS

Scientific Library, San Diego

By ROSE HENDERSON

AMERICAN public libraries the country over are being more thoughtfully adapted to the tastes and needs of their particular communities and so represent in an interesting way the individualities of various localities. The library is coming to have greater importance as a center of community interest, being combined in many instances with art galleries and little theaters and so deepening and enlarging its original function and appeal. The architecture of these libraries often reflects this growing democracy of service, and the buildings in a number of instances have become definite parts of civic schemes instead of existing in a remote and superior manner and acknowledging no æsthetic obligation or kinship to their neighbors.

Architects and building committees are beginning to realize a few of the possibilities in harmonious civic planning and are developing something like unity and coherence instead of the chaotic conglomeration of styles and periods represented in many of our cities, from Fifth Avenue to Main Street. A library is now most frequently designed with reference to a whole community center, as in Pasadena, where a beautiful new structure will form a unit in a group of public buildings planned and commissioned at the same time. The example of intelligently coördinating architectural groups, large and small, is having its gratifying influence. At Rancho Santa Fe, Calif., for instance, an entire town is being built on an old Spanish estate which was once the 9000-acre cattle range of a famous soldier of fortune. The owner built his adobe manor house on a sumptuous scale, and the building still stands in the shelter of magnificent pepper trees. It has been decided to preserve the old ranch house and all the relics of the past and to erect new structures that will accord with the setting and traditions. Some 400 domestic designs will be developed in the Spanish Colonial type of architecture, and also shops, offices, school buildings and a civic auditorium.

Spanish architecture of impressive design distinguishes the Scientific Library of San Diego, and the interior carries on and elaborates in unique detail the general structural character and feeling. The library is a part of the California Building which was designed by Bertram G. Goodhue for the San Diego Exposition. It has recently been utilized as a library center in one of the most harmonious park groups in the country. Instead of building cheap, temporary exposition structures and then wastefully

Photos. Herbert R. Fitch

Main Hall, Scientific Library, San Diego

Bertram G. Goodhue, Architect

Main Entrance

"scrapping" them, San Diego was far-sighted enough to recognize the opportunity for evolving a distinctive civic group in Balboa Park, and the result is a delightful model with valuable suggestions for community builders anywhere. The permanent exposition buildings have been adapted gradually to various civic functions, and a new art gallery has been constructed recently to harmonize with the group.

The Scientific Library is conveniently located at the west end of the Plaza, next door to the Museum of the American Indian. Its main facade is rich with ornament typical of the Spanish Renaissance. Sculptured figures from Spanish-American history fill niches above and on either side of the main entrance, and a pleasing window and balcony arrangement occupies the center of the facade above the arched doorway. At the right of the entrance rises a massive tower that is topped with colored tile mosaic, and on either side are restful wall areas, soft and mellow in texture. The building as a whole affords an admirable illustration of the architectural value of simple austerity of plain walls relieved by concentrated ornament in dome or facade or by richly encrusted arches. Deep walls in rough plaster finish give a delightful sense of seclusion inside, and the treatment of ceilings and balconies is gracious and dignified. Striking interior features are the great carved monuments from Quirigua, suggesting in graphic detail the Mexican spirit which has in-

Carved Monuments from Quirigua, Scientific Library, San Diego
Bertram G. Goodhue, Architect

fluenced the architecture and which represents what is perhaps the most significant scientific interest of this southwestern country. Geographically and sympathetically, San Diego is close to the ancient civilizations of Mexico and Central America, and the Scientific Library suggests the rich and barbaric atmosphere of the Spanish-Indian cities in a unique and dignified manner. The grotesque monoliths are so placed that they enter harmoniously into the architectural design. They carry the eye up to carved balcony friezes, emphasize the solidity of an austere column, or else mark the center of a curving alcove.

In the main lobby of the library are beautiful mural paintings by Carlos Vierra, representing the ancient Maya cities of Mexico, Guatamala and Honduras. These are satisfying decorative panels, and they are scientifically accurate. They have the tawny yellows, the enchanting pinks and blues of the actual ruins. The Jean Beman Smith frieze portrays the life of the ancient peoples of Central America, and there is a replica of the frieze of American discovery and conquest by Sally James Farnum, the bronze original of which is in Washington.

The interior furnishings and decorations are distinctly in keeping with the atmosphere and purpose of the building, and the structure as a whole represents an unusual blending of the appeal of science and of art. Maya paintings by Henry Louvins in bright blue, red and yellow form brilliant panels of

Main Hall from Balcony

Botanical Building and Garden, Scientific Library, San Diego

Bertram G. Goodhue, Architect

color on the gray walls and are singularly at home in the unusual setting. These designs represent actual primitive motifs and are developed in characteristic color and form. The central open space, under the dome and enclosed by massive pillars, is devoted to reading tables, magazine racks and catalog files. Back of this central area are book stacks and reading alcoves. In the balconies are books and various art exhibits, including those of ceramics, tapestries and casts. Gorgeous Chinese vases and majolica ware, brasses and other colorful displays are appropriately placed in the long gray alcoves. Mural paintings are set effectively into the plain wall spaces below the upper windows and above the carved balcony balustrades. Beamed ceilings, as well as carved doors and pilaster ornaments carry on the Spanish-Mexican feeling of the impressive facade.

In addition to its advantages of felicitous housing, the Scientific Library enjoys a most ideal landscape and architectural setting. Just around the corner are a botanical building and conservatory, banked with tropical flowers and shrubbery and reflected in magnificent lily pools. Lofty arches connect the library with secluded winding driveways bordered with flowering shrubbery and slender columns of eucalyptus. Across the street from the library is the "Science of Man" Building, closely affiliated with the Scientific Library in its exhibits and lecture courses. Beyond this building is the Natural History Museum with its richly encrusted ornament and sweeping arcades. To the east of the library is the great paved Plaza de Panama, surrounded by other picturesque structures of Spanish and Mexican types. South of the Plaza are the beautiful "cascades," and a sloping, flower-set lawn flanked by buildings used as a music center, and a branch library.

Cabrillo Bridge, Connecting Botanical Gardens and Scientific Library, San Diego

Bertram G. Goodhue, Architect

The Forum Studies of European Precedents

VILLA CURONIA, FLORENCE

Text by EDWIN SHERRILL DODGE, Architect of Restorations

AS far as is known, the Villa Curonia belonged to the Taddei family in the fourteenth century. In 1905, the then kitchen court was discovered to contain a beautiful courtyard of about 1450, with columns in two stories in the best Brunelleschi manner. During the process of restoring this courtyard I discovered evidences of earlier work on the same foundations, so there was probably a villa on the same site as early as the middle of the fourteenth century. On the town house of the Taddei family in Florence is a tablet stating that Raphael was a frequent visitor to the family in that house, and it is therefore entirely probable that he spent considerable time at the villa.

In a facade of the sixteenth century is a curious and unique curved wall, which I have always attributed to Raphael himself, but I have to admit that this attribution has been scouted by antiquarians. It is, however, very much in his manner, and I see no reason why he should not, during one of his visits, have sketched these curves which have a balance and swing which seem to me peculiarly his. During the siege of Florence, in 1525 I think, the besiegers took possession of the villa, owing to its commanding position, and from there bombarded Florence. There are still evidences of the counter-attacks of the Florentine defenders. During the seventeenth and the two following centuries, little is known about the villa, although there are evidences of work having been done, as it contains a chapel of the late seventeenth century with a Rococo plaster ceiling. The villa was bought by me in 1905 from a Russian, Baron de Nolda, who had owned it since 1890. He had changed the name to "Villa Curonia,"—Curonia being the Italian for his native Baltic province of Kurland.

Owing to the legend of Raphael in connection with the villa, I had the walls of the important rooms examined by experts for traces of possible frescoes, which that master might presumably have executed, during some of his many visits, but nothing of importance was ever found. The rooms on the ground floor are all vaulted and are about 15 feet high. The second floor has a stud of about 12 feet. Of course the scale of the rooms is enormous.

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Photos. Paul J. Weber

TERRACE, VILLA CURONIA

The Forum Studies of European Precedents; Plate 90

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SERVICE END, VILLA CURONIA

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DRAWING ROOM TERRACE, VILLA CURONIA

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GARDEN WALK, VILLA CURONIA

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FORECOURT, VILLA CURONIA

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DRAWING ROOM WINDOW, VILLA CURONIA

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FORMAL GARDEN, VILLA CURONIA

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Cheltenham High School, Elkins Park, Pa.

DAVIS, DUNLAP & BARNEY, Architects

THE Cheltenham High School, at Elkins Park, in Cheltenham Township, Pa., is one of the most recent as well as one of the most successful public school structures built in the neighborhood of Philadelphia. This school has been so planned that, when the building program is ultimately completed, it will be H-shaped, the principal frontage being on one of the uprights of the H. That part of the building already finished, and opened for occupancy in January last, is the northeastern leg of the H. As the growing needs of the township require it, the remaining portions of the school structure will be erected in the manner provided for in the comprehensive scheme. As a matter of fact, although the part of the building now in use is adequate to meet the present actual needs, an additional unit is now under construction. This will provide more classrooms and likewise more ample space for the teaching of "domestic science" and other branches.

The building as it now stands furnishes accommodation for 1,000 pupils. In addition to the usual classroom accommodations, there are offices for the superintendent of the school district and his assistants; offices for the principal and his secretary; a large auditorium capable of seating over 1,000; a library; a music room where the school orchestra, the school band, the glee club and other musical organizations hold their rehearsals, and where some musical instruction is given; an art room, in which drawing and water color lessons are given; rest rooms for men and women teachers; a common faculty room, in which the teachers' luncheon is served; and completely equipped chemistry, physics and biology laboratories. Every need is provided for.

The school building stands on a steep hillside sloping abruptly away from the long northeastern front. This renders it possible to have a large, airy, well lighted basement with windows overlooking the slope. In this basement, underneath the flag-paved terrace along the northeastern front, are the boys' and girls' gymnasiums. In connection with each gymnasium and convenient of access from the halls of the main floor above are spacious and well ventilated locker rooms with toilets and shower baths adjoining. Connected with each gymnasium likewise are offices for the physical directors, and "corrective" rooms with the necessary appointments for physical examinations and special apparatus for the treatment and correction of physical defects. In the offices there is filing space for card indices containing the physical records of all pupils in attendance at the school. The boys' gymnasium, where basket

Auditorium, Cheltenham High School, Elkins Park, Pa.
Davis, Dunlap & Barney, Architects

PUBLIC LIBRARY

LOWER TERRACE, NORTHEAST FRONT
CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.
DAVIS, DUNLAP & BARNEY, ARCHITECTS

DETAIL OF CARVING AND BRICKWORK
CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.
DAVIS, DUNLAP & BARNEY, ARCHITECTS

ball games are played, has a gallery with a seating capacity of 350. The basement also contains a large and completely appointed kitchen with a cold storage and refrigerating plant of the most approved sort. Immediately adjoining the kitchen is the cafeteria, directly conducted by the school authorities, where the pupils can get a well cooked hot luncheon at barely more than actual cost. The diet is properly varied and under careful supervision. From the kitchen a dumbwaiter connects with the faculty room above, so that luncheon for the teachers can readily be sent up to them. The remainder of the basement area is given over to the heating and ventilating plants. The heating is automatically controlled, so that an even temperature can be maintained throughout the entire building. There is also an emergency lighting system to be used in event of there being any temporary stoppage of the outside lighting current. Over and above the provisions already mentioned, on the upper floor there are a doctor's office for the school's medical superintendent; a nurse's room connected with the rest rooms, and equipped with every conceivable requisite for emergencies; and a fully appointed dentist's office, where not only can the pupils' teeth be thoroughly examined but where also any kind of dental work can be performed when occasion calls for it in school administration.

Urn and Pedestal, Cheltenham High School
Davis, Dunlap & Barney, Architects

In the extension now being built there will be a thoroughly equipped food laboratory where instructions will be given in cooking, balanced diets and the scientific management of foods; a "clothing laboratory," where sewing and clothes making will be taught; and a model apartment consisting of living room, dining room, bedroom, bath, kitchenette and laundry, which will serve as a basis for instruction in furnishing and housekeeping. The offices of the superintendent and of the principal are on the main floor, near the center of the structure; the central hallways are wide enough to insure ease and rapidity of circulation and to give room for the pupils' coat and hat lockers, in such places as they occur; the typewriter rooms of the commercial department are on the upper floor of one of the projecting wings, over the drawing or art room, so that the noise of the typewriters cannot disturb classes in the body of the building; the music room is on the ground floor of the corresponding wing and separated from the rest of the structure by an open archway so that neither rehearsals nor singing lessons can annoy classes in session; and the laboratories are in the uppermost central block of the structure over the main entrance, placed there probably in order to secure proper ventilation for them.

The walls of the school are built of brick with cut limestone trimmings. The faces of the walls display a bond consisting of two courses of stretchers to one course of alternating stretchers and headers, the headers being a dark purplish brown in contrast with the orange salmon of the stretchers. The windows have limestone sills, limestone keystones, and metal sashes and casings painted cream. Except for the driveway of pebbles and small stones embedded in asphalt, the main terrace between the wings and before the principal front of the building is paved with rough bluestone flagging.

With the exception of the interior partitions, the inner construction of the building is altogether of reinforced concrete; the partitions are built of terra cotta tile. The stairs are of steel construction with slate treads and cast iron risers; the balustrades are of wrought iron with wooden handrails. All the floors in the classrooms are of wood laid over concrete slabs. In the lobby and halls the floors are of terrazzo, in a pattern of black and white chequers at the entrance, but of one color elsewhere throughout the entire building, thus giving the rooms a certain desirable uniformity.

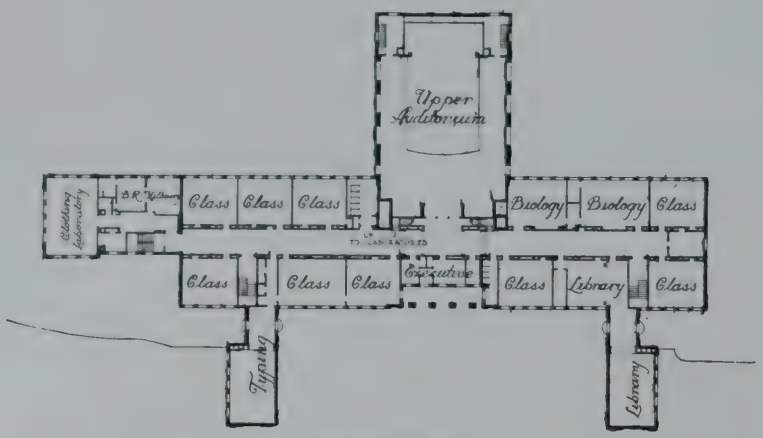
In the case of the Cheltenham High School the architects have not only successfully surmounted the usual difficulties by keeping the building from looking like a factory but they have also reached a very positive achievement. While making a virtue of necessity, they have given to the structure great interest and distinction. In this connection, it is worth noting that the two tower-like drums, rising above the roof directly over the arched passageways giving access to the great upper terrace, not only contribute materially to the advantage of the composition but also house the ventilating fans that pump out the exhausted air. In the same way, the attic story over the main entrance, which is vital to the composition, accommodates the laboratories which have ample window provision on the sides away from the front.

Photos. H. D. Eberlein

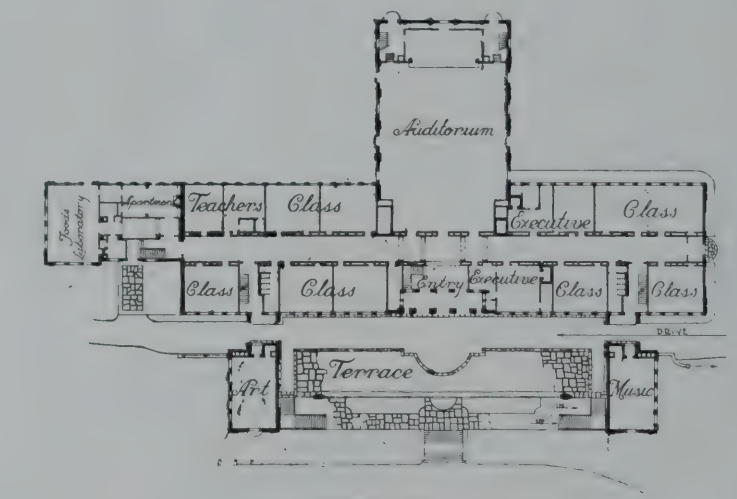
Plans on Back

CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.

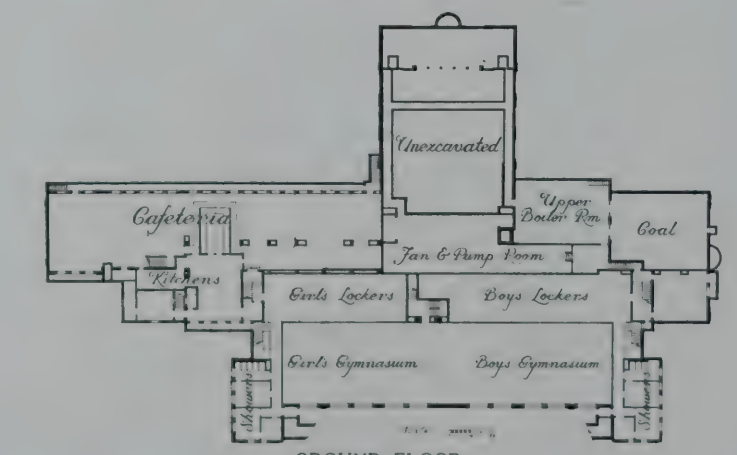
DAVIS, DUNLAP & BARNEY, ARCHITECTS



SECOND FLOOR



FIRST FLOOR



GROUND FLOOR

PLANS, CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.

DAVIS, DUNLAP & BARNEY, ARCHITECTS

NORTHEASTERN FRONT AND TERRACE

CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.

DAVIS, DUNLAP & BARNEY, ARCHITECTS

WEST SIDE, NORTH WING
CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.
DAVIS, DUNLAP & BARNEY, ARCHITECTS

END OF NORTH WING

CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.

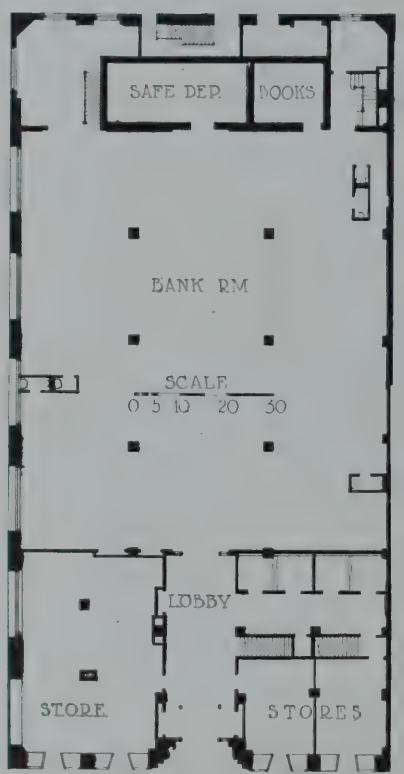
DAVIS, DUNLAP & BARNEY, ARCHITECTS

ARCHWAY, NORTH WING
CHELTENHAM HIGH SCHOOL, ELKINS PARK, PA.
DAVIS, DUNLAP & BARNEY, ARCHITECTS

LIBRARY

Plan on Back

ERIE TRUST COMPANY, ERIE, PA.
DENNISON & HIRONS, ARCHITECTS



FIRST FLOOR

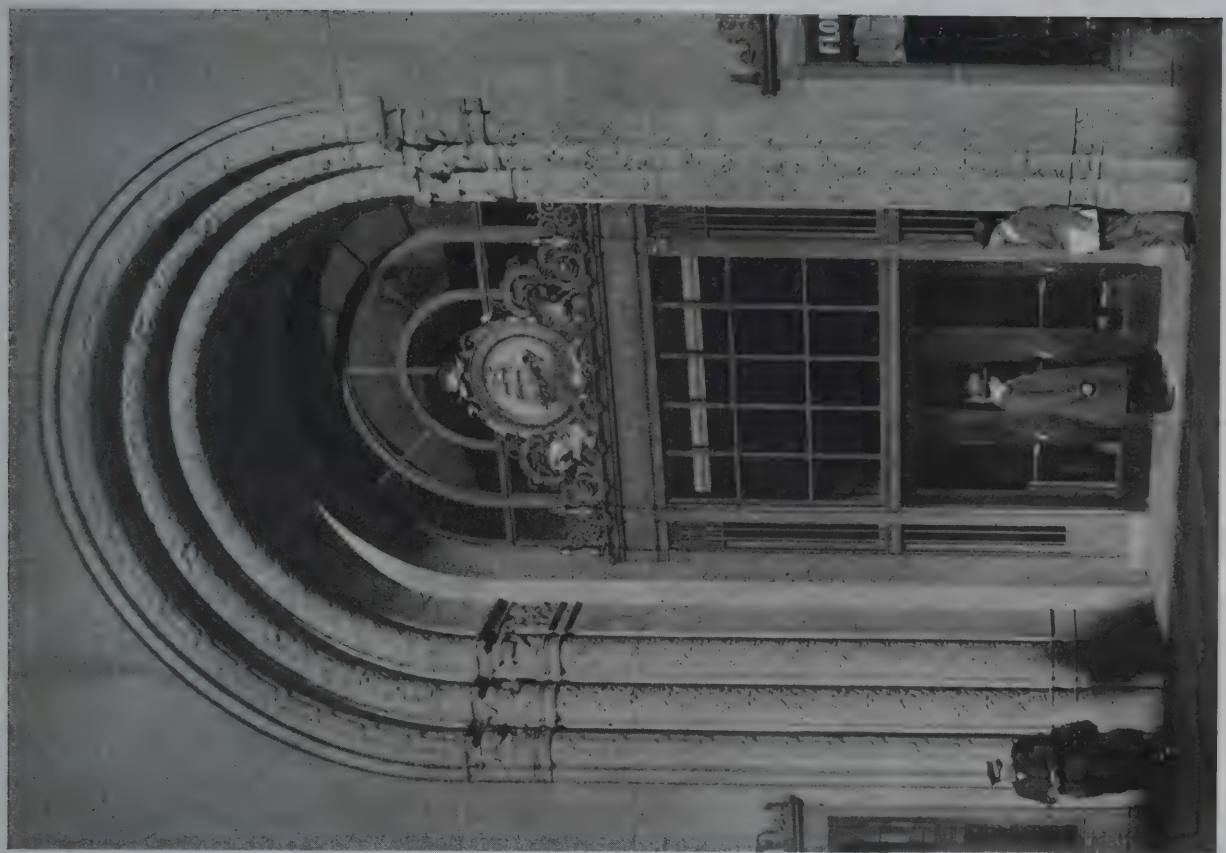
PLAN, ERIE TRUST CO., ERIE, PA.

DENNISON & HIRONS, ARCHITECTS

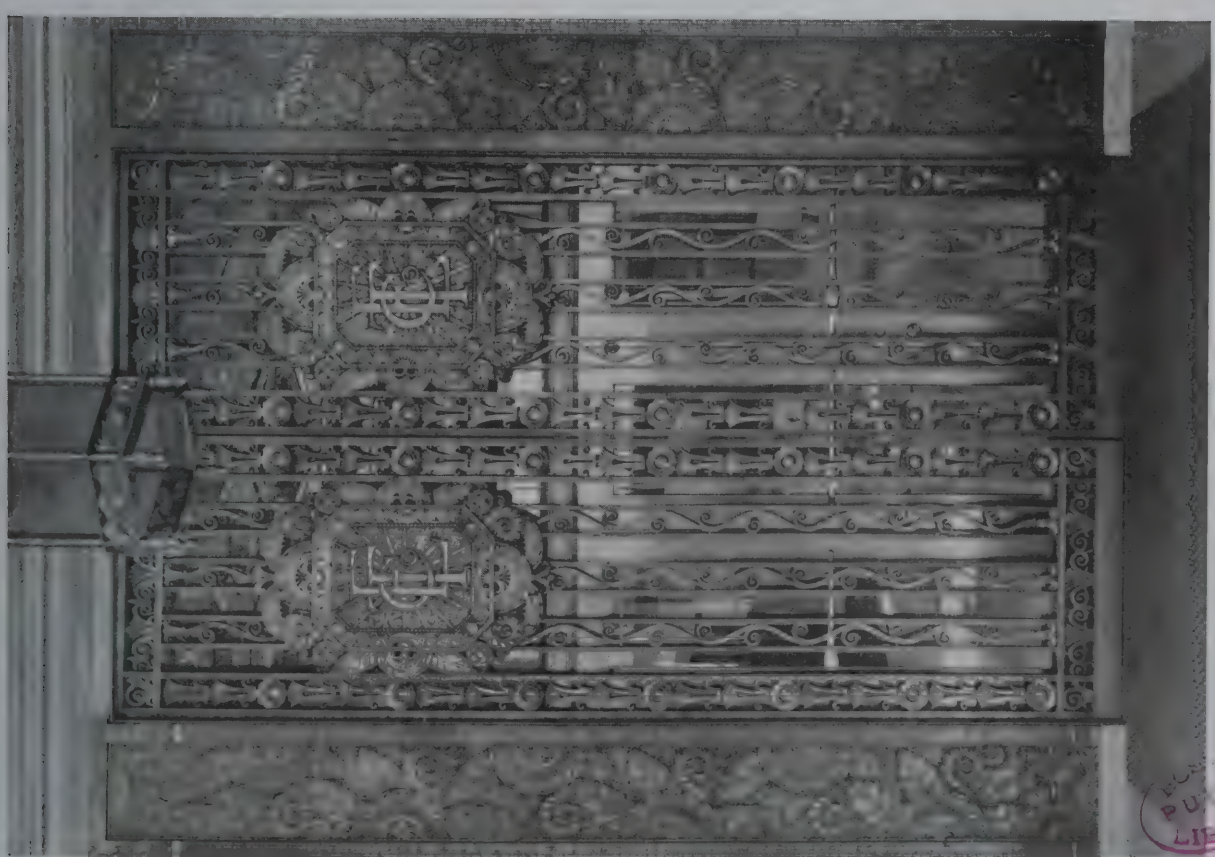
BANKING ROOM

ERIE TRUST COMPANY, ERIE, PA.

DENNISON & HIRONS, ARCHITECTS



MAIN ENTRANCE



A DOORWAY

ERIE TRUST COMPANY, ERIE, PA.
DENNISON & HIRONS, ARCHITECTS

PUBLIC LIBRARY

Some Impressions of Mexico; Part II

By WILLIAM P. SPRATLING

Illustrated with Sketches by the Author

MEXICO, the city, is in some ways very elegant. There is the beautiful *Pasco de la Reforma,* which was laid out by Maximillian as a sort of *Champs Elysees,* and the *Avenida Francisco Madero,* which rivals our Fifth Avenue and possesses the advantage of having the *Casa de Azulejos* and good saloons! At the end of it there is the centralized and splendid *Plaza de la Constitution,* flanked on the four long sides by the cathedral, the *Palacio Nacional,* the *Palacio Municipale,* and with one side of the plaza continuously arcaded forming the *Portales.* The flower market and the thieves' market are there, and, housed in a palace, the *Monte de Piedad,* the national pawn shop. It is a wonderful city, full of strange contrasts, and the capital of a country where almost anything can (and usually does) happen. Adjoining the cathedral is an early and almost severely classic structure, the *Sagrario Metropolitano,* almost pagan in its wealth and joyous abandon of Churrigueresque detail. It is undoubtedly the finest thing of this sort in the New World. Each of the two sides presents a centerpiece which from top to bottom is like a piece of rare lace. The wall area on either side is *tezontle,* a volcanic stone, very coarsely textured, and ranging in color from a deep brownish pink to maroon and magenta. Two richly carved doorways at either side are extremely good, and the pilastered corners have many breaks. From the fountain at the far corner, looking back and up, the repeated curves and gorgeously cut line of the top of the wall, with the low dome for a background and rising back of that the towers of the cathedral, seem to express the spirit of the thing.

It is hard to realize that the men who devoted themselves to the building of these things were more or less pioneers and, though they must have sensed strongly the feeling of the design they were about, that after all they were really a grim and rather uncompromising race of God-fearing men. This will be felt even more decidedly in the buildings that were erected in the hills and away from the veneer of modern clothing and candy shop fronts that is likely to obscure such things. Frequently these people built magnificently. There is a sense of grandeur in some of the old palaces of Mexico City. The "House of the Cannons," which was built by Altamarino, a cousin of Cortez, splendid as it is, is not even a unique example. It has a wealth of detail about the entrance, with carved wood doors worthy of being in the national museum, and a cornerstone said to have been laid by the hands of Cortez himself, which is a monolithic "Plumed Serpent" taken from the old Aztec Temple of the Sun, which once stood in the *Plaza Mayor.* That would indicate that the house was built within the first quarter of the sixteenth century. The cannons for gargoyles still shed water effectively. This house is matched in splendor by one of very similar type, but of even richer and almost Louis XV detail, which is in the *Avenida del Isabel la Catolica.* The material here is the same, a very soft toned pink *tezontle* in square blocks with a sort of limestone trim. The detail of the center feature with its rich leafwork, heavy bronze rail and, above, the carved stone gargoyles suggesting in shape and design the Aztec, combines in a very satisfying manner with the broad, roughly textured pink and red surfaces. These two houses are rather magnificent in their way, but as a matter of fact the same type is to be found in many examples presenting less pretentious effects.

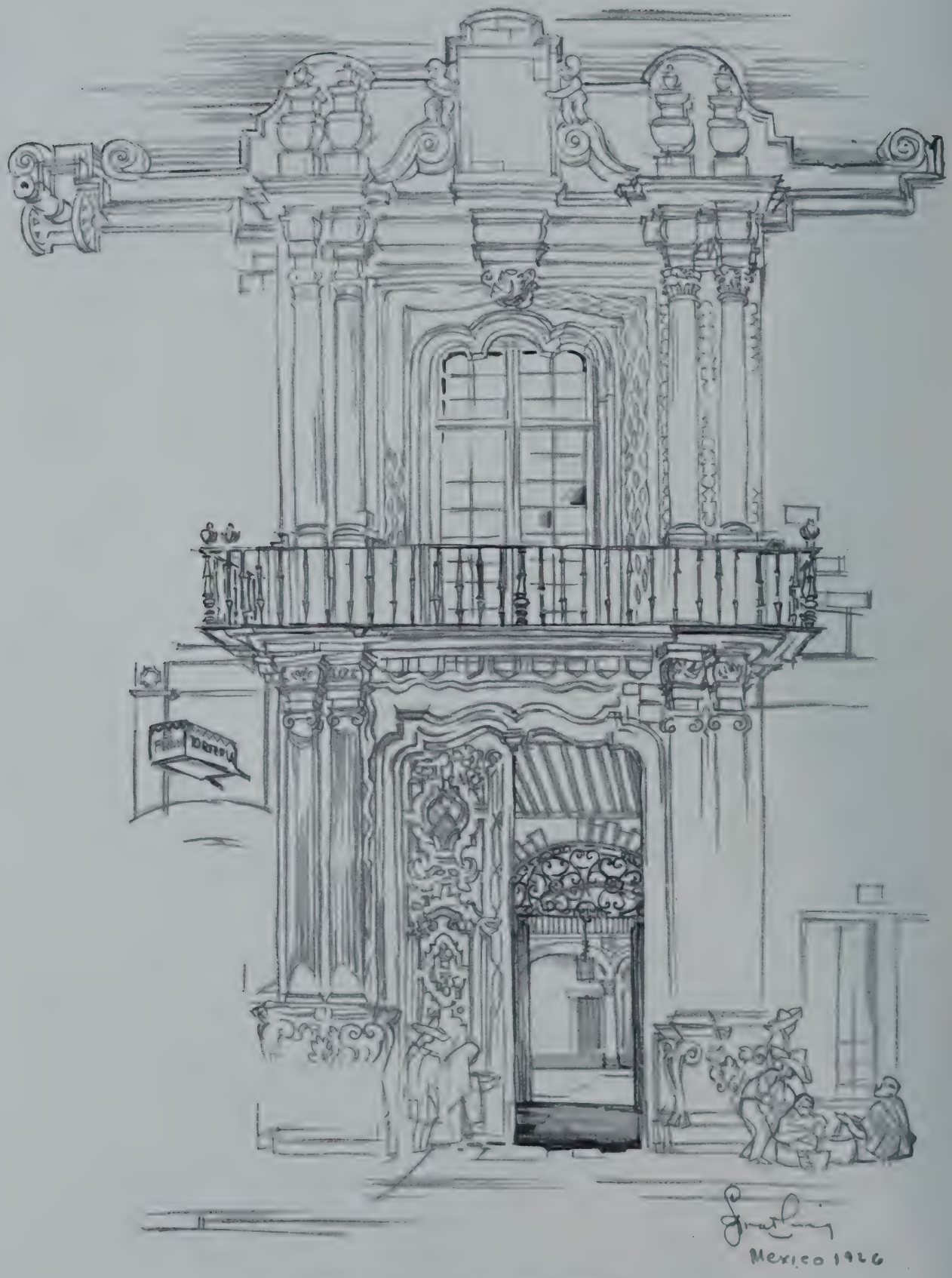
The Hotel Iturbide, once the palace of the prince of that name, who later made himself emperor, is a remarkably fine structure. The detail here is more conservative, but the scale is greater, and the effect of dignity in an entrance with hung doors of paneled cypress that are from 5 to 6 inches thick and that must be something over 22 feet high is tremendous. This effect of space is heightened by the vista through three successive patios. It is a five-story building and in plan very extensive, with four great courts radiating from a central court. The treatment of the galleries of the interior court consists of beautifully moulded light elliptical arches and well balanced detail. The *Casa de Azulejos* (House of Tiles), is another building that could never be equaled on this continent and probably not in Europe for its type. In this fine structure Puebla tiles on exterior wall surfaces have been harmoniously and charmingly combined with the body of the building in stone and carving done in the Plateresque. At the same time, and particularly in the patio, the *Casa de Azulejos* reveals distinct traces of the Mudejar.

One of the first things that happened to me in Mexico was that Regadas Vertiz sent me to see the *Santisima Trinidad.* As has been noted, churches in Mexico, as shrines for architectural study, are almost numberless. The *Santisima* is the church generally regarded as the best example of the Churrigueresque after the *Sagrario Metropolitano,* and while the interior, as is frequently the case in Mexico, is a disappointment (due to certain revolutions of taste and the attempted grafting on of Italian ideas), the body of the exterior atones for the defect.

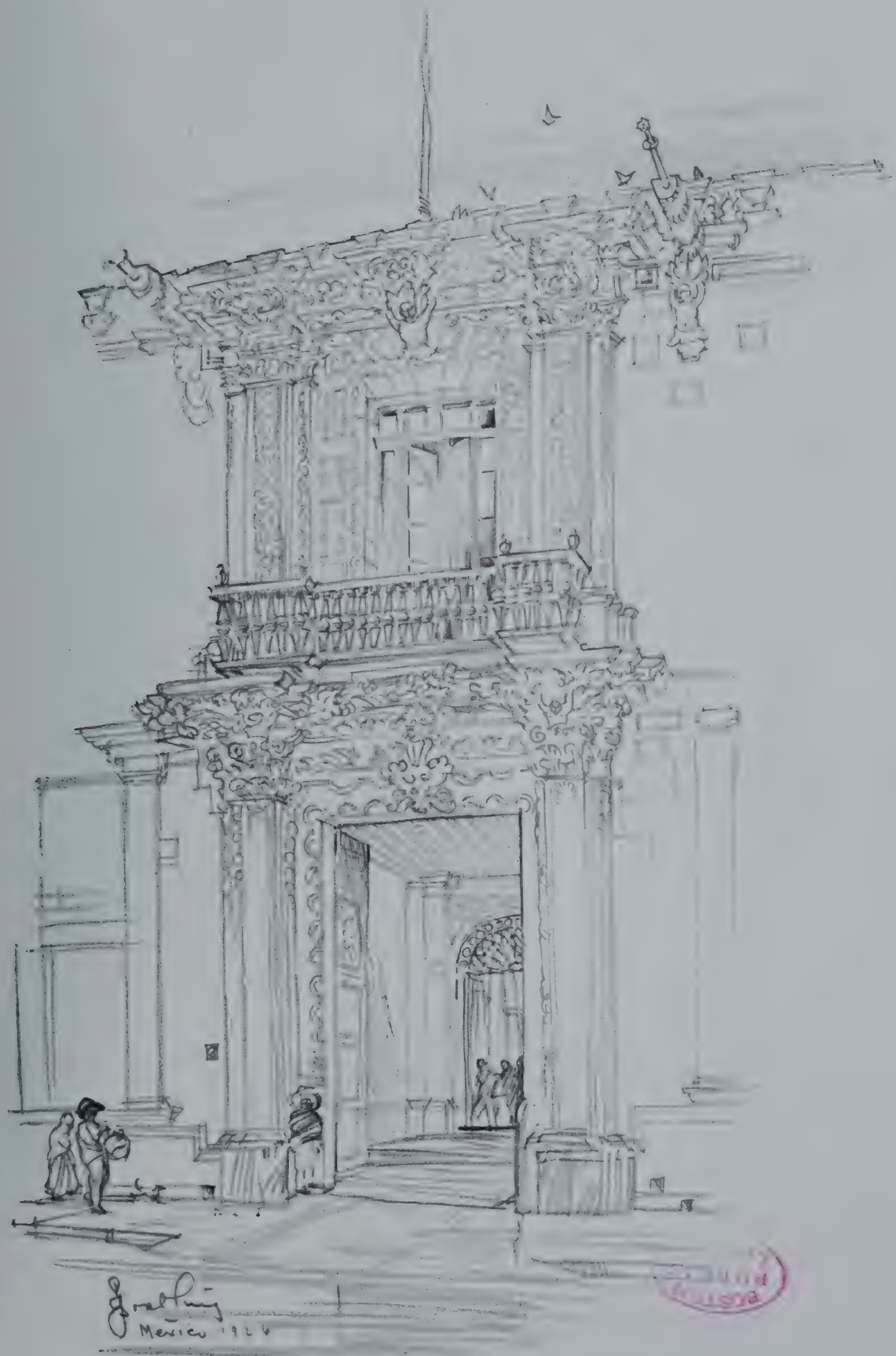
It is rather difficult to write of the country itself without launching into rhapsodical descriptions, and second-hand enthusiasms are not always convincing. One distinct advantage that Mexico as a capital enjoys is the fact that, once there, one finds in and around the valley of Mexico, within a radius of 25 miles or so, a large share of the most important and most absorbing of the colonial architecture. Even Puebla, which is probably the second city of the re-

THE SANTISIMA TRINIDAD, MEXICO

CATHEDRAL, PUEBLA; CHAPELS AT APSIDAL END



HOUSE OF ALTAMARINO, MEXICO



HOUSE ON THE AVENIDA DEL ISABEL LA CATOLICA, MEXICO

THE SHRINE, GUADALUPE

CATHEDRAL, VERA CRUZ

public, is within only four hours of Mexico by automobile. One can reach there comfortably, traveling in this manner, for about two dollars American; and the journey there is equally as breath-taking as that to Cuernavaca. At the highest point on the road, at an elevation of something over 12,000 feet, a small signboard tells the motorist that in one direction the waters drain to the Gulf of Mexico and in the other proceed to the Pacific Ocean. With the memory of that particular trip still freshly in mind, it is not easy to leave the idea. Our road skirted the two snow-clad volcanoes, Popocatepetl and Ixtaccihuatl, and in the clear morning atmosphere, with the white clouds far below us, the still pale smoke was plainly visible on the peak of "Popo." Gleaming snow on the heights showed long, blue, slightly mysterious shadows.

On the other side of the mountain, approaching Cholula, the Aztec pyramids were visible from a great distance. The greatest, somewhat larger than the Egyptian pyramids at Ghizeh, is crowned triumphantly with a Franciscan church in pink and white, which is not very pure in form. It was here in Cholula that Cortez fought his greatest battles on the march up from the coast. In early times it was a great center, very populous, and the Church of San Francisco, built to take care of the overflow from an earlier structure, was roofed with 16 or more domes. There seemed something remarkably chaste about this simple and curious basilica with its cool white spaces of interior, and each dome as a structure honestly confessing itself within and without.

Puebla is best seen on top and inside,—as I discovered from the top of one of the belfries of the cathedral. Up there one discovers oneself quite removed from the commonplaces of street life and lifted to a strange and intimate nearness with tea-cup domes and charming and fragmentary vistas of church-dotted countryside. The colors are lively, and the successive houses may be pink and green with perhaps a sky-blue stained arcaded patio. The nearest dome, which, in a way, fills one's vision, is of canary yellow and pale green tile,—rather small tiles, glistening so as to suggest the afore-mentioned tea-cup. The dome at the apsidal end is grace itself, and delicately ribbed domes of the subordinate chapels, with the typically Spanish characteristic of plenty of massive wall space, make a splendidly composed group when studied from almost any angle.

Coming out of the country and back by Vera Cruz, I brought much material,—not only in the portfolio of drawings, but principally in the form of a completely new set of ideas about the country. The trip down to the coast must be always amazing, no matter how many times repeated. The descent from 12,000 feet of altitude to sea level is accomplished in three downward climbs from the three particular plateaus, and it takes more than 12 hours. On precipitous heights villages suddenly appear some 2,000 feet or so below. The various stages of plant life develop at the different levels; the atmosphere becomes almost oppressive; tropical growth becomes so luxuriant and rich as to almost seem to explode from the earth; and by the time Vera Cruz is reached it is difficult to realize that one is in the same country.

Architecturally, the finest thing in Vera Cruz is of course the cathedral. •At 4:30 in the morning the effect was magnificent. At any rate, I lay and watched the dawn arrive. The cathedral flanked directly on the opposite side of the plaza, and the pale gray light revealed the pink and blue dome above tropical foliage as a luminous and lovely thing. A little later I got out drawing pad and pencil and made some more sketch notes to help fix the vision.

Mexico is a country in which, with its fourteen million Indians, more than two-thirds of the population has actually been unincorporated in and almost unrelated to the government,—that "minority of advanced civilization!" It occurred to me that few people can possibly realize the vast extent of the work of enfranchising these hundreds of tribes and of making them aware of their own nation. In doing this there is the delicate problem of preserving the things that are the Indians' own,—the customs and habits of living, the fiestas, half mystic beliefs, and all the accumulation of traditional matter, including the all-important "popular arts." The present government has demonstrated the strength of its intentions in regard to this solidification, and the results are already becoming concrete. The work of Manuel Gamio has been of inestimable value. There has been a definite sort of awakening in Mexico due to his influence in regard to these things that had been overlooked and neglected by political people for so many years. In his schools the beautiful arts of weaving, mat-making, *sarape*-making, lacquer work etc., have been revived and stimulated. He has also been identified with the work on the excavations at Teotihuacan, the establishment of the museum there, and the building of an open-air little theater that certainly rivals anything in the United States. It is a significant fact that the popular arts in Mexico have never been dead, and that even in the remote regions the people have always been making wonderful things with their hands, and also that in these remote parts are found gorgeous and intricately designed textiles made by the savage and absolutely untutored Indians. This is in spite of four centuries of oppression and of many devastating revolutions!

It all gave me the feeling that something was really happening to the country, that at last there was some movement toward a national consciousness, that the people there were discovering the beauty that was truly their own. The frescoes of Diego Rivera in the Ministry of Education reveal an amazingly vital expression of this consciousness. There was the work of the American, Frances Toor, and her magazine called *Mexican Folkways*,—which seemed to be getting at a lot of things that had been long neglected. Many other incidents, too numerous to mention, indicated a new feeling in the republic toward what is truly "Mexicana" and the spirit that must come with any renaissance within that country.

SMALL BUILDINGS

Photos. George H. Van Anda

VILLAGE OF LARCHMONT GARAGE
W. KENNETH WATKINS, ARCHITECT

NOTHING is more encouraging to the architect than to discover a public building possessing the degree of originality and charm shown in this public service group of the Village of Larchmont. The color and quality of the stonework possess the proper rural character, suggesting in a way stone farm buildings in Normandy and Brittany. The use of irregular quoins for the windows and door of the principal building in the group indicates the unusual amount of care bestowed upon the details of this public service building. The use of half-timber and stucco for the long one-story wings of the group is in pleasant contrast and harmony with the stonework. The 12-paneled entrance door with the metal grille above, set into a deeply recessed arch, is a carefully designed feature seldom found in a public building of such utilitarian purpose. The roofs are covered with variegated colored slates which blend well with the tone of the stonework. The plan is so designed that a future

Plan, Village of Larchmont Garage

FORUM SPECIFICATION AND DATA SHEET—190

Village of Larchmont Garage
W. Kenneth Watkins, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Masonry.
EXTERIOR MATERIALS:
Front, stone, stucco, half-timber; sides, concrete.
ROOF:
Pitched roofs, slate; flat roofs, slag.
WINDOWS:
Steel-sash; wire glass, factory type.
FLOORS:
Office, oak; garage and storage rooms, cement.
HEATING:
Hot water.
PLUMBING:
Hot and cold water to lavatory and garage.
ELECTRICAL EQUIPMENT:
Factory reflectors in garage and store room; office lights in office.
NUMBER OF CARS ACCOMMODATED:
Six trucks, four passenger cars, one steam roller, one tractor, one compressor.
APPROXIMATE CUBIC FOOTAGE:
80,000.
COST PER CUBIC FOOT:
50 cents.
DATE OF COMPLETION:
July, 1926.
MISCELLANEOUS DATA:
Shops in one wing; storage for water department in opposite wing.

sizable addition can be added which will completely close in the wide rectangular courtyard. In the group are included large storage rooms or sheds designed to house material belonging to various departments of the village, such as water supply and repair apparatus. The Village of Larchmont is showing unusual appreciation of good municipal architecture. It also possesses a splendid building, used as a fire house and auditorium, and designed by Charles F. Mink and Otto R. Eggers, which was published in THE FORUM for June, 1927. If such a precedent for good architecture as Larchmont is setting should be followed by other small towns and villages, what an improvement in taste would follow, and what increased public appreciation of good architecture would be achieved where it is now so lacking.

Office Door

Office Wing

Village of Larchmont Garage
W. Kenneth Watkins, Architect

LIBRARY

Photos. John Wallace Gillies

GARAGE OF WALDO SHELDON, ESQ., SOUTH NORWALK, CONN.
FRANK J. FORSTER, ARCHITECT

WHERE the grade falls away sufficiently, it is often possible to place a garage in the basement of a country house. It is, of course, more convenient if the garage can be located on the same level as the first floor. In the case of this house at South Norwalk, advantage has been taken of the hillside location, and the house was so placed as to give a pleasing, low character to the entrance front. Thus the main floor of the house is located several feet below the grade of the entrance front. To reach the main floor it is, therefore, necessary to descend several steps from the entrance porch. So successfully is the garage tied into the design of the house that it is not only an integral part of it but also from the front its purpose is not evident. The fall in grade makes it possible to enter the end of the

Plan, Garage and House of Waldo Sheldon, Esq., South Norwalk, Conn.

FORUM SPECIFICATION AND DATA SHEET—191

Garage of Waldo Sheldon, Esq., South Norwalk, Conn.

Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Masonry.

EXTERIOR MATERIALS:
Stone

ROOF:
Wood shingles.

WINDOWS:
Casements and steel sash.

FLOORS:
Random-width planks; stone, linoleum, and tile.

HEATING:
Hot water.

PLUMBING:
Standard fixtures; gas hot-water heater.

NUMBER OF CARS ACCOMMODATED:
One.

APPROXIMATE CUBIC FOOTAGE:
44,229.

COST PER CUBIC FOOT:
84 cents.

DATE OF COMPLETION:
February, 1925.

garage on the first floor level and to conceal it by the use of hedges and planting. In this case the garage is reached from the main house through an entryway at the rear of the kitchen, which convenient arrangement is most desirable wherever possible. In this case the low roof of the garage wing pleasantly breaks the roof lines of the entire building, adding much to the picturesqueness of the group.

Terrace, House of Waldo Sheldon, Esq., South Norwalk, Conn.
Frank J. Forster, Architect

Photos. John Wallace Gillies

GARAGE OF ARTHUR HAMMERSTEIN, ESQ., WHITESTONE, N. Y.
DWIGHT JAMES BAUM, ARCHITECT

THIS garage in the English style forms an important part of the design of this country house group. A covered brick arcade ties the garage into the house in an attractive architectural manner and repeats, in the materials and design used, the definite style of the house itself. The half-timberwork of the second story contrasts in its less pretentious construction with the dignified brick walls of the structure. The high roof, broken by dormer windows, has a domestic or farm-like character appro-

Second Floor

First Floor

Plans, Garage and House of Arthur Hammerstein, Esq., Whitestone, N. Y.

FORUM SPECIFICATION AND DATA SHEET—192

Garage of Arthur Hammerstein, Esq., Whitestone, N. Y.

Dwight James Baum, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Brick and half-timber.

EXTERIOR MATERIALS:
Face brick, stucco and oak half-timber.

ROOF:
Antique shingle tile.

WINDOWS:
Steel casements.

FLOORS:
Cement.

HEATING:
Vapor, from house.

NUMBER OF CARS ACCOMMODATED:
Three.

priate to a service building on a country estate. The plan of the garage is also clearly indicated by the short one-story wings on either end, over which are brought down the long sweeps of the high roof. These small wings contain a stairway and tool room on one side and a bedroom and bath on the other. The height of the roof makes it possible to locate a sitting room and bedrooms for the chauffeur and servants on the second floor. The roof is so designed that there is very little slope to diminish the height of these second story rooms, and yet the exterior elevation gives the effect of a low building. The flat tile of the roof, the hand-hewn half-timberwork, and the rough stucco give a picturesque quality to an otherwise rather formal building. This is an excellent plant and arrangement for a three-car garage.

House and Garage of Arthur Hammerstein, Esq., Whitestone, N. Y.
Dwight James Baum, Architect

Photos. John Wallace Gillies

GARAGE OF WILBUR BRUNDAGE, ESQ., DOUGLASTON, N. Y.
FRANK J. FORSTER, ARCHITECT

LIBRARY

IN the development of a country house, large or small, the garage is often designed as an integral part of the house. This incorporation of the garage in the house itself has several advantages, among which is the convenience to an owner of being able to reach his garage in bad weather without going out of doors. However, many garages thus structurally connected strangely enough have no doors opening into the houses themselves. This is probably due to a desire to keep down insurance rates, which in some sections of the country are higher if a garage is connected to a house by a door, even

Plan, Garage and House of Wilbur Brundage, Esq., Douglaston, N. Y.

FORUM SPECIFICATION AND DATA SHEET—193

Garage of Wilbur Brundage, Esq., Douglaston, N. Y.

Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Stucco and half-timber.

EXTERIOR MATERIALS:
Half-timber; brick base.

ROOF:
Slate.

WINDOWS:
Metal.

FLOORS:
Concrete.

HEATING:
Hot water, from house.

PLUMBING:
Water supply.

NUMBER OF CARS ACCOMMODATED:
One.

APPROXIMATE CUBIC FOOTAGE:
35,300.

COST PER CUBIC FOOT:
81 cents.

DATE OF COMPLETION:
June, 1925.

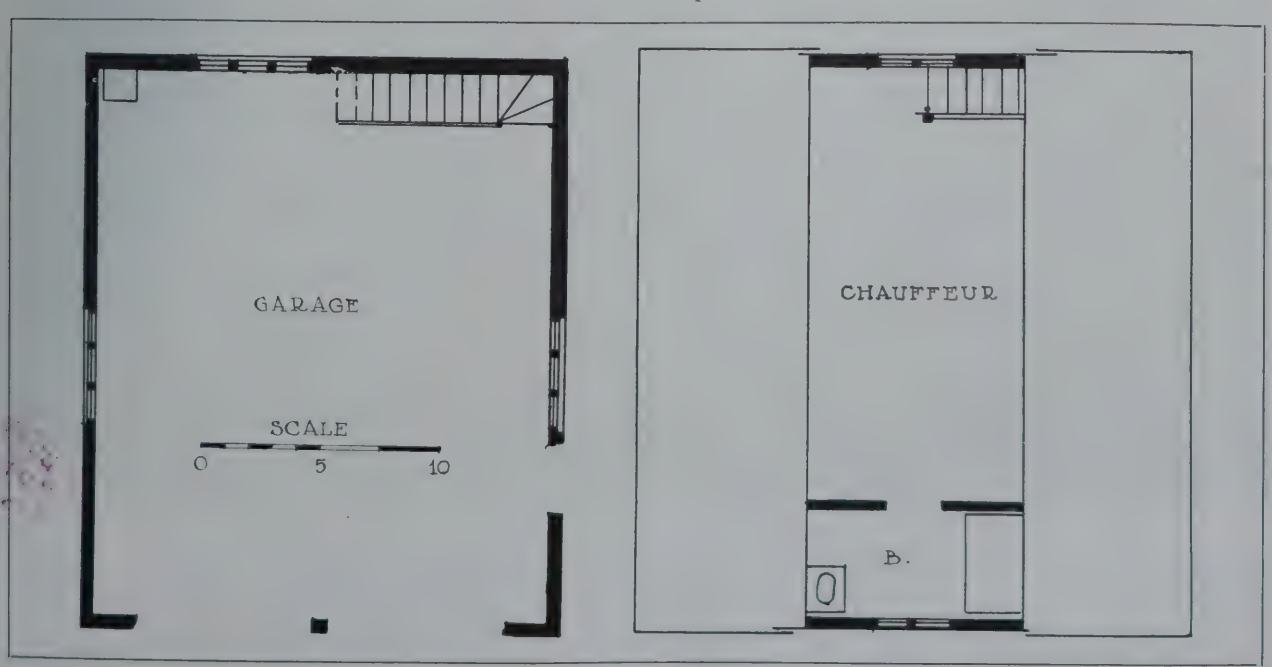
though the door be of fireproof construction. Another decided advantage in having the garage form a part of the house itself is that it makes possible a more picturesque and interesting exterior design. As in the illustration given here, the single-car garage which adjoins the main house at right angles forms one side of a small courtyard in front of the service entrance door. In the case of the Brundage house there is no door which connects the garage with the house proper. It might have been possible to have extended the gable formed by the maid's room, so that from this room a narrow corridor could have been taken off which would have led from the kitchen to the garage. The use of half-timber for the walls of the garage above the high brick base course gives a note of variety in contrast to the whitewashed brick walls of the house itself. There is not much that can be said in regard to the planning of a small garage except that wherever possible there should be included a strongly constructed workbench with drawers and cupboards below, and an open sink supplied with hot and cold water; also that, whenever feasible, the garage floor should be sloped to a drain so that it would be possible to wash a car indoors in cold weather. Private garages built to accommodate two or more cars should include small workrooms as well as chauffeurs' bedrooms and their baths,—almost as important as the garages.

House of Wilbur Brundage, Esq., Douglaston, N. Y.
Frank J. Forster, Architect

Photos. John Wallace Gillies

GARAGE OF CHARLES H. CUNO, ESQ., MERIDEN, CONN.
FRANK J. FORSTER, ARCHITECT

HERE is a detached two-car garage with chauffeur's bedroom and bath on the second floor. The proportions of this little building are excellent. The high pitched roof, the casement windows and the interesting planked treatment of the doors all give character to an otherwise plain design. Where gutters are omitted it is always wise to use a metal strip, as was done here above the side entrance door



FORUM SPECIFICATION AND DATA SHEET—194

Garage of Charles H. Cuno, Esq., Meriden, Conn.
Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Stucco on frame.

EXTERIOR MATERIALS:
Stucco; oak doors and trim.

ROOF:
Slate.

WINDOWS:
Steel casements.

FLOORS:
Concrete.

HEATING:
Hot water, from house.

PLUMBING:
Complete bathroom.

NUMBER OF CARS ACCOMMODATED:
Two.

APPROXIMATE CUBIC FOOTAGE:
6,720,—garage only.

COST PER CUBIC FOOT:
70 cents.

DATE OF COMPLETION:
November, 1923.

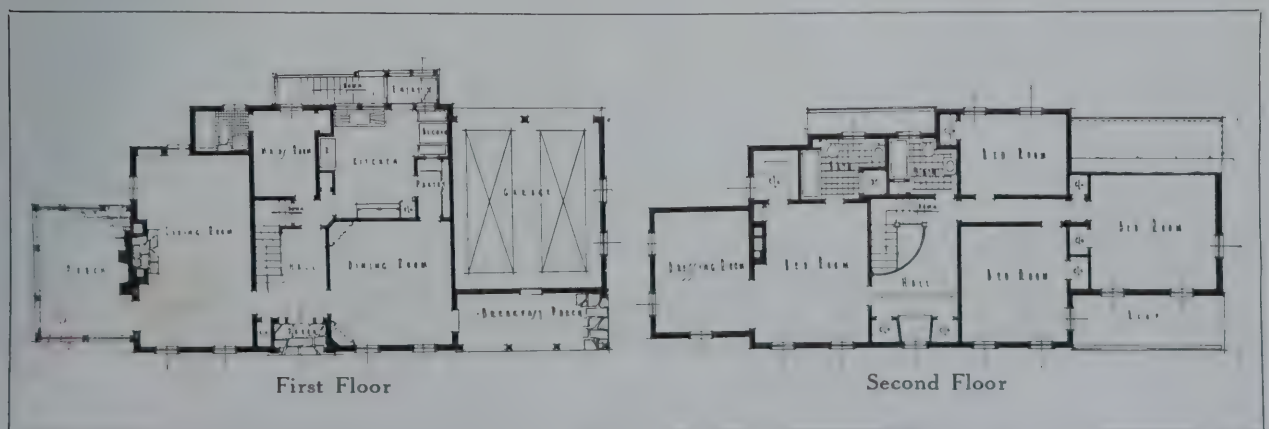
of the garage, to keep the water from dripping on the door step. The flagstone walk and low, stucco-covered wall help to tie in the design of this garage with that of the house itself. Wherever possible, an excellent plan is to connect a detached garage with the house by means of a colonnade or covered walk; even a pergola, thickly covered with vines, may well serve this purpose. When no covering is provided for the walk, the garage should be located as closely adjacent to the house as possible. This is particularly important in northern climates, where the winters are long and the snow deep at times. In designing covered walks to connect houses and garages, it is a good idea to enclose one side of the arcade or covered way with either a wall or glass sashes, to aid in making the composition rather more complete.

House of Charles H. Cuno, Esq., Meriden, Conn.
Frank J. Forster, Architect

Photos. John Wallace Gillies

GARAGE OF CHESTER YOUNG, ESQ., PELHAM, N. Y.
FRANK J. FORSTER, ARCHITECT

GIVEN the character of an old time carriage house or woodshed, this garage at Pelham is very definitely not only a part but a very important part of the design of the house. This fact is more noticeable on the rear elevation, which is designed in two stories, making possible windows for the rooms above the garage, as well as an attractive small breakfast porch on the first floor, the porch also serving as a covered passageway between the house and the garage. The illustration on the next page shows at the back of the small porch a door which opens directly into the garage. As is true of all of Mr. Forster's work, the detail is given much thought and study; the small paned windows are well proportioned and carefully placed, and the simple cornices are well designed. So much a part of the house is this garage that it is difficult to discuss the one without including the other. There is a delightfully prim neatness about this entire design which suggests its New England antecedents and shows that the architect is quite as much at home when working with early American precedent of different kinds, as he is when designing in the English cottage styles, with skill for which he is widely known.



First Floor Second Floor

FORUM SPECIFICATION AND DATA SHEET—195

Garage of Chester Young, Esq., Pelham, N. Y.

Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Shingles.

ROOF:
Shingles.

WINDOWS:
Wood; double-hung.

FLOORS:
Random-width planks of oak and pine.

HEATING:
Hot water.

PLUMBING:
Standard.

NUMBER OF CARS ACCOMMODATED:
Two.

APPROXIMATE CUBIC FOOTAGE:
44,657.

COST PER CUBIC FOOT:
63 cents.

DATE OF COMPLETION:
May, 1925.

Breakfast Porch, House of Chester Young, Esq., Pelham, N. Y.
Frank J. Forster, Architect

Photos, John Wallace Gillies

GARAGE OF GERALD M. LAUCK, ESQ., UPPER MONTCLAIR, N. J.
FRANK J. FORSTER, ARCHITECT

HERE is one of Mr. Forster's small buildings designed in a simple adaptation of the English country house style. The building is covered with stucco and roofed in an interesting manner with rough slates of varying sizes. The second story windows break the roof, accentuating the low lines of the house. The garage at one end is so well tied into the entire design by a continuation of the main roof down over it that were it not for the wide plank doors no suggestion of a garage would be given. The low roof of the garage is repeated by the roof of the service porch, which might have been on the same level as the garage roof were it not for the second story dormer windows, which would have been too high for the rooms had these roof levels been the same. No direct connection exists between the garage and the house itself. Had it been possible to locate the outside cellar steps in some other place, the servants' porch might have served as a covered passage to the garage, as was the case in the Young house, illustrated on pages 179 and 180. One advantage in including a garage as a part of the house is the possibility of locating servants' quarters above it, an excellent plan, giving more bedrooms.

First Floor Second Floor

Plans, Garage and House of Gerald M. Lauck, Esq., Upper Montclair, N. J.

FORUM SPECIFICATION AND DATA SHEET—196

Garage of Gerald M. Lauck, Esq., Upper Montclair, N. J.
Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Brick veneer; stucco, whitewashed.

ROOF:
Slate.

WINDOWS:
Steel casements.

FLOORS:
Random-width oak planks, linoleum and tile.

HEATING:
Hot water.

PLUMBING:
Standard.

NUMBER OF CARS ACCOMMODATED:
Two.

APPROXIMATE CUBIC FOOTAGE:
32,400.

COST PER CUBIC FOOT:
84 cents.

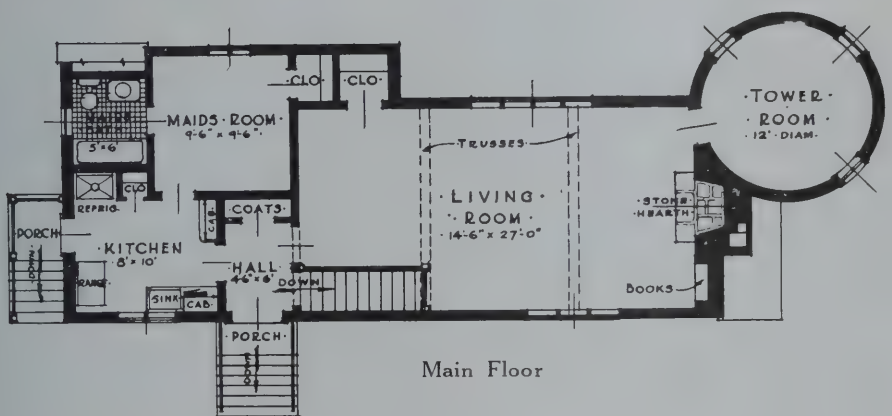
DATE OF COMPLETION:
May, 1925.

Detail, Garage of Gerald M. Lauck, Esq., Upper Montclair, N. J.
Frank J. Forster, Architect

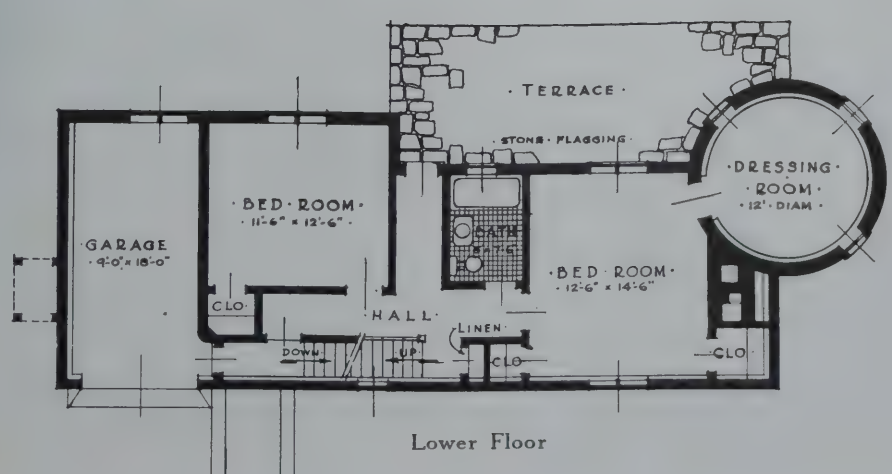
BOSTON PUBLIC LIBRARY

Photos. John Wallace Gillies

GARAGE OF W. W. SIEBERT, ESQ., GREAT NECK, N. Y.
FRANK J. FORSTER, ARCHITECT



Main Floor



Lower Floor

FORUM SPECIFICATION AND DATA SHEET—197

Garage of W. W. Siebert, Esq., Great Neck, N. Y.
Frank J. Forster, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Stucco on frame.

EXTERIOR MATERIALS:
Stucco.

ROOF:
Wood shingles.

WINDOWS:
Wood casements.

FLOORS:
Random-width pine.

HEATING:
Hot water.

PLUMBING:
Standard.

NUMBER OF CARS ACCOMMODATED:
One.

APPROXIMATE CUBIC FOOTAGE:
25,169.

COMPLETED COST PER CUBIC FOOT:
65 cents.

DATE OF COMPLETION:
October, 1926.

IN this unusual small house located on a steep hillside not only the garage but also the principal bedrooms are located on the lower floor. On account of the unusual drop in grade, all of these rooms have large, full-sized windows on the rear of the house. Above the garage and bedrooms, on what is really the main floor of the house, are located the living rooms and kitchen, reached by a flight of stone steps at the right of the garage. The design of this house is as unique as it is picturesque. Its plan is so arranged that it is possible to have a door opening directly from the garage into the house itself. This door opens from the garage into a small stair-hall, connecting directly with the bedroom floor and, by means of a stairway, with the cellar below. The ingenuity and originality shown in the planning of this house are both delightful and entertaining. It abounds in details which are interesting and unusual.

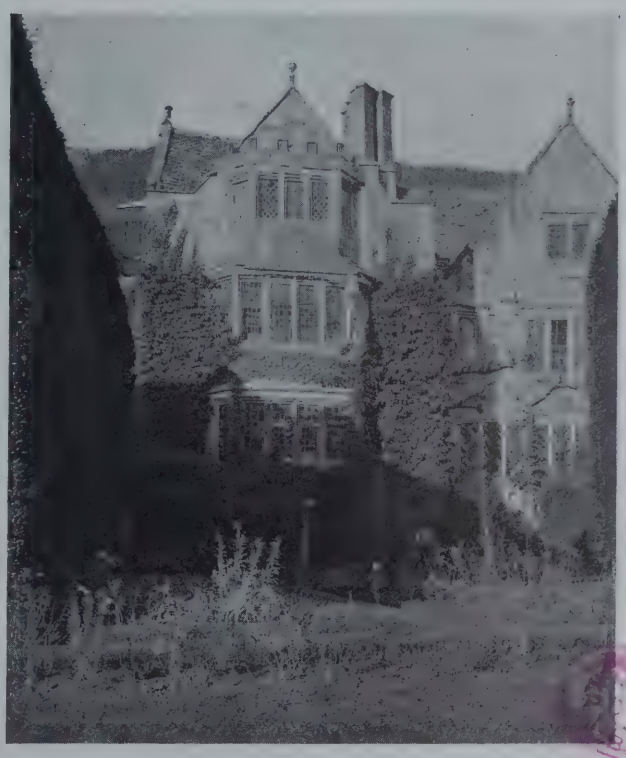
Detail, House of W. W. Siebert, Esq., Great Neck, N. Y.
Frank J. Forster, Architect

INTERIOR ARCHITECTURE

Owlpen Manor House, Gloucestershire—Part II

By HAROLD D. EBERLEIN

SINCE it exists practically unchanged since the time it was built during the reign of James I, Owlpen Manor House affords a rich field for study by the architectural designer. The accompanying illustrations and measured drawings so fully convey the requisite particulars respecting general style and treatment of details that only a few explanatory comments are needed to fully cover what the illustrative material here does not explicitly show.



Detail of Main Facade, Owlpen Manor House

The material of which the house is built is the native limestone of the Cotswolds, which after exposure to the weather ranges in color from silvery gray to warm cream and tawny browns. Often in the same wall a rich gradation of colors may be found. The roof slates, as is customary throughout the region, are fashioned from the same material as the walls and take on a silver gray, flecked with moss growths and lichens. Indoors, the same limestone, where used for fireplaces, mullions and doorways, is likely to bleach to a light ashen hue, much lighter than the color of the stone when it is freshly quarried. Cut into rectangular slabs and used for floor paving, it gradually acquires a peculiarly mellow color, varying from warm cream to a light leather brown. The masonry of the walls in some places is rubble, while in others there is a face of carefully dressed ashlar. The roughcast plaster, which appears in some of the gables and on portions of the walls, marks repairs and patches that have been made from time to time. At one point on the main front, where the wall had bulged and then been strengthened with tie-irons, the whole adjoining surface was given a coat of roughcast stucco, blending well with the stonework.

In the great hall the hob grate built into the fireplace is of later date, of course, than the house. The oak paneling, in the lapse of centuries, has sagged and slipped down over the upper part of the carved stonework of the fireplace. Through a doorway of the great hall can be seen a part of the paneling in one of the rooms beyond, and in one room there appear curious curved lines on the surface of each panel. These curving lines, which are crudely painted on the oak, represent an early seventeenth century attempt at graining,—one of the earliest attempts on record, so far as England is concerned. All of the old glazing is in place. It displays no little diversity of sizes and shapes and quality of the glass itself. A good deal of it, apparently, was pieced together from various sources at the outset, or else replacements were made at an early date, without much regard to uniformity of patterning throughout the house, or indeed in the same range of windows. To whatever cause these striking variations of sizes and leading may be attributable, the glass is old, and the effect is pleasant.

It is worth noting that many of the steps of the winding staircase are hewn from solid blocks of oak; their aspect agrees perfectly with the structural sturdiness displayed throughout the whole fabric. The durability of these steps is in sharp contrast to the condition of some of the floors which, until recent repairs were carried out, were in a sadly decayed state. In the dining room the Queen Anne paneling is painted a color that might be described as a cross between puce and faded salmon. Incidentally, this color and the tones closely related to it enjoyed great favor for woodwork in the late seventeenth century and the early years of the eighteenth. The effect is highly pleasing. In the bed chamber above the dining room the walls are hung with canvas painted in the manner of tapestry with verdure and human figures. The drawing is in the fashion of the late seventeenth century, but the work was

GARDEN "BALLROOM"

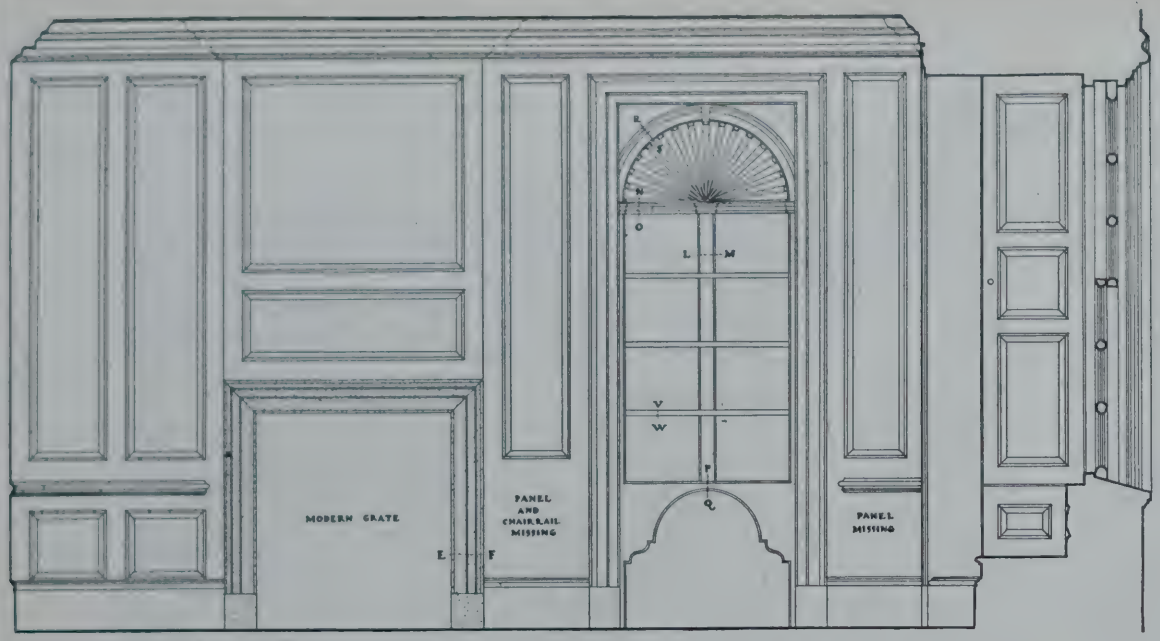
ALLEY AT NORTH END

OWLPEN MANOR HOUSE, GLOUCESTERSHIRE

NORTHWEST ANGLE

SOUTH GARDEN DOOR

OWLPEN MANOR HOUSE, GLOUCESTERSHIRE



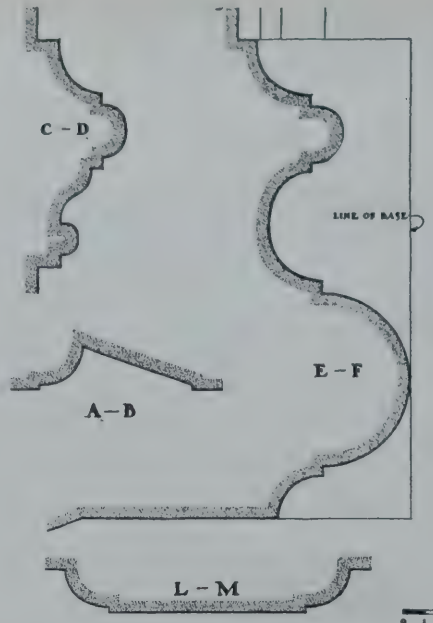
EAST WALL

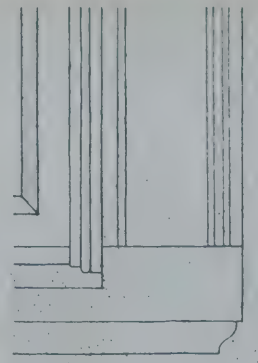
WEST WALL

SCALE OF ELEVATIONS 0 1 2 3 4 5 6 7 8 FT.

SCALE OF DETAILS 0 1 2 3 4 5 6 INS.

V-W

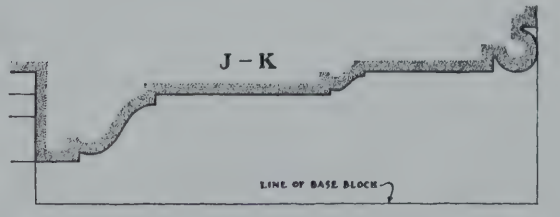


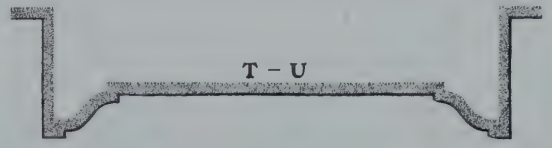


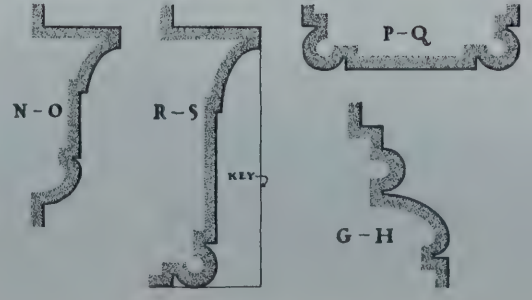
EXTERIOR ELEVATION OF WINDOWS
same scale as window jamb section

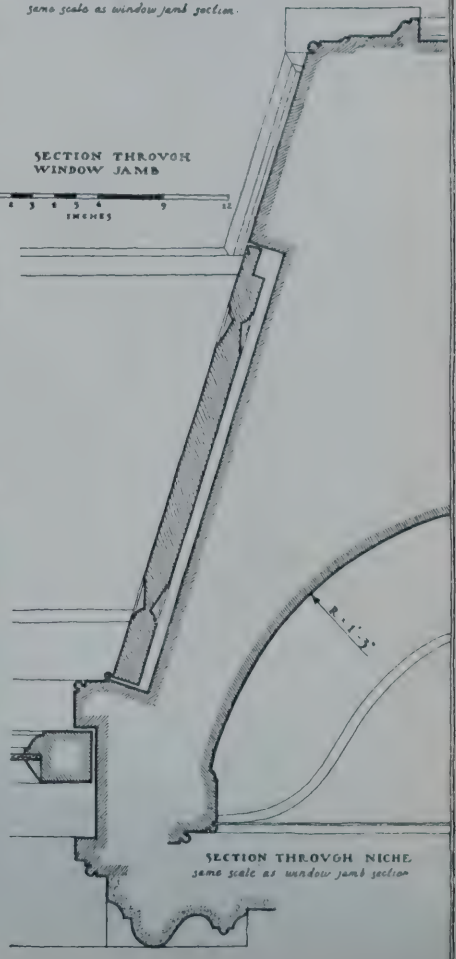
SECTION THROUGH WINDOW JAMB

0 1 2 3 4 5 6 9 12 INCHES







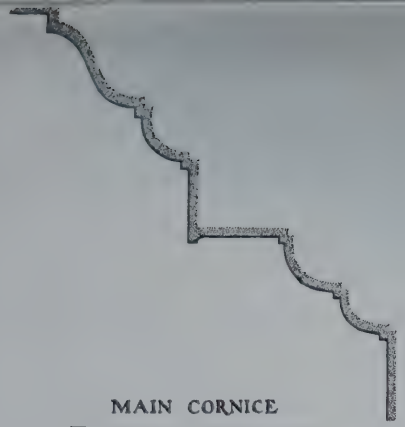


SECTION THROUGH NICHE
same scale as window jamb section

The Dining Room

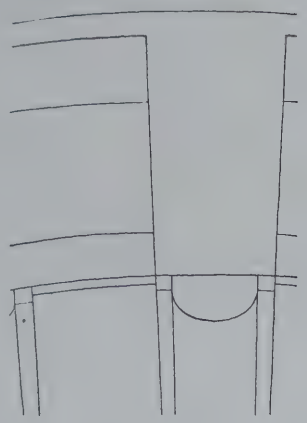
THE MANOR HOUSE OWLPEN, GLOS.

F.F.A. COMSTOCK MEMS F.T. DEL

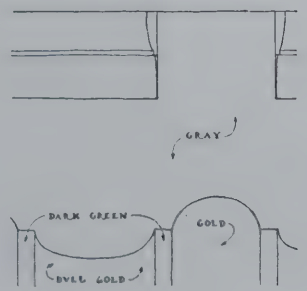


MAIN CORNICE

0 1 2 3 4 5 6 INS.



ELEVATION

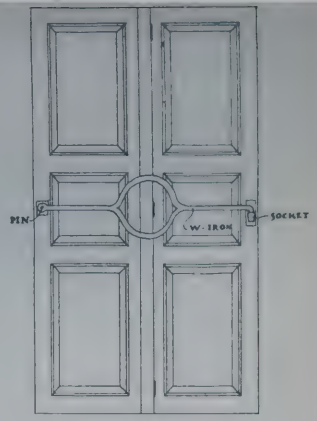


LOOKING UP

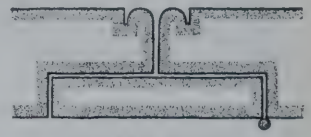
NICHE DETAILS

NORTH WALL

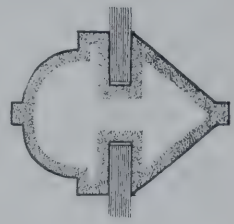
SOVTH WALL



SHVTTERS



SHVTTER DETAIL



MVNTIN DETAIL

V – W

NOTE: THIS ROOM IS PAINTED A WARM GRAY. THE PANELS ARE SLIGHTLY DARKER.

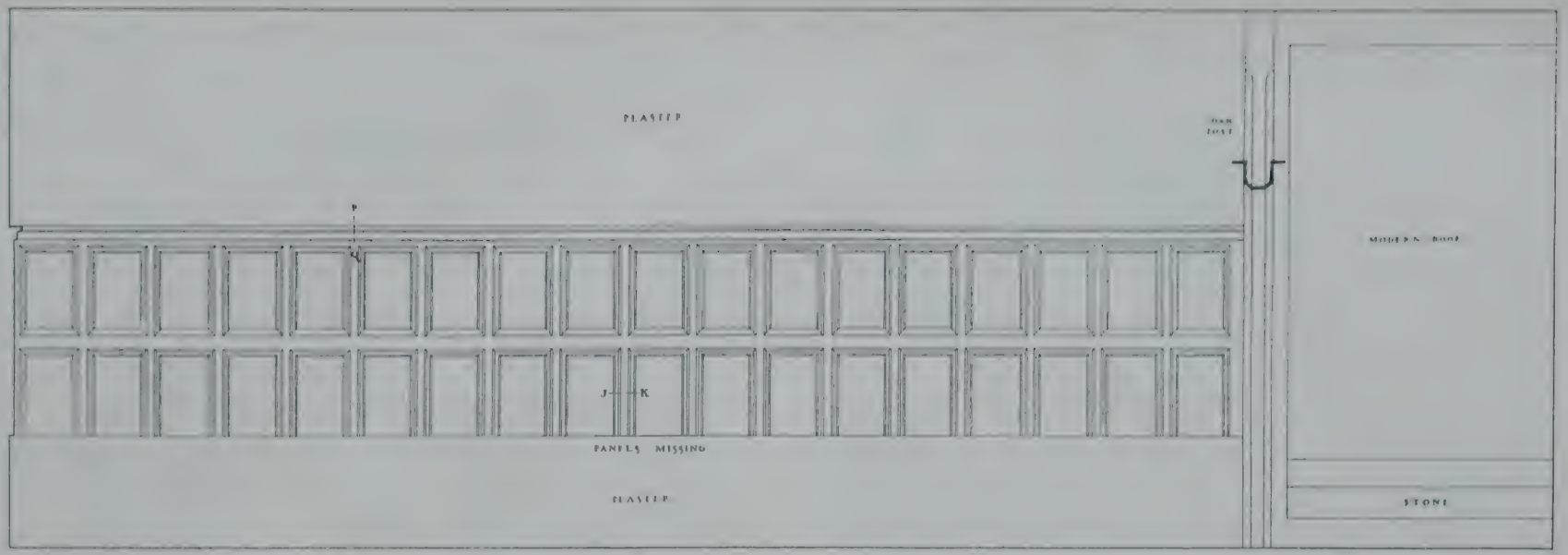
SCALE OF ELEVATIONS 0 1 2 3 4 5 6 7 8 FT.

SCALE OF DETAILS 0 1 2 3 4 5 6 7 8 INS.

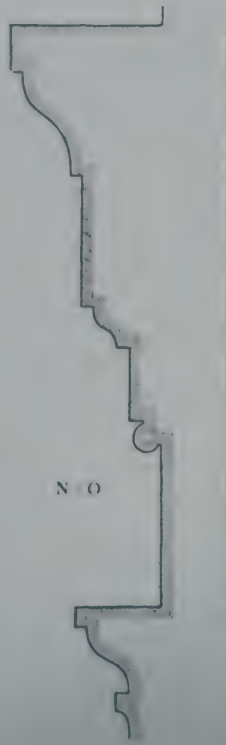
THE MANOR HOVSE OWLPEN, GLOS.

F. F. A. COMSTOCK MENS ET DEL.

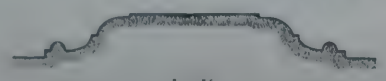
The Architectural Forum



NORTH WALL



SOUTH WALL



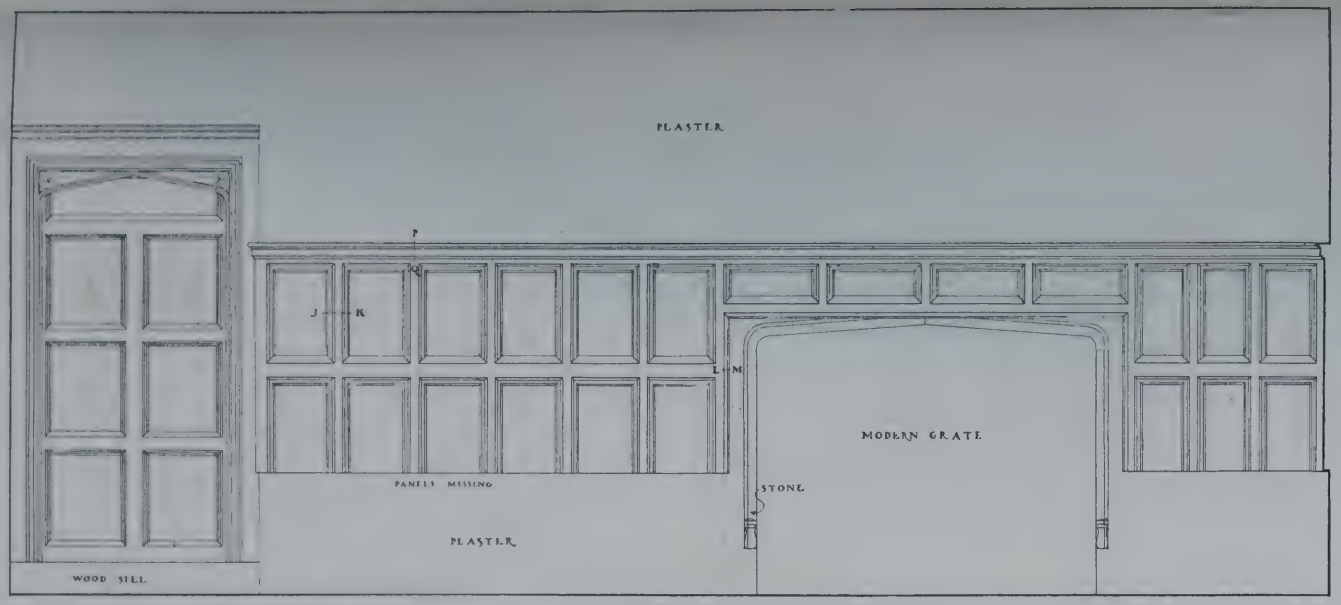
SCALE FOR ELEVATIONS

SCALE FOR DETAILS

THE HALL

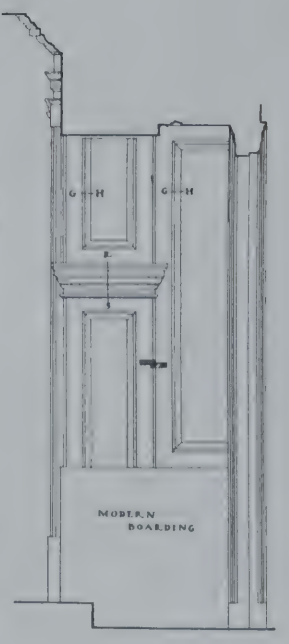
THE MANOR HOUSE OWLPEN, GLOS.

August 1



WEST WALL

EAST WALL



SECTION THROUGH ARCH

THE HALL

THE MANOR HOVSE, OWLPEN, GLOS.

SCALE FOR DETAILS 0 1 2 3 4 5 INS.

SCALE FOR ELEVATIONS 0 1 2 3 4 5 6 7 FEET

F. P. A. COMSTOCK MENS. ET DEL.

probably executed when the Queen Anne embellishments were installed. The different greens of the foliage prevail, but the garments of the small figures, gathered in occasional groups, give an opportunity for brilliant color accents. These painted canvas hangings are remarkably well preserved and afford an exceptional example of a sort of wall decoration of which very few traces are left. The beautifully necked and moulded chimneystacks and the carved finials on the peaks of the gables and dormers are, of course, thoroughly characteristic of the Cotswolds. The Cotswold limestone is a peculiarly favorable medium for sculpture and the carving of mouldings, and the old builders rarely lost an opportunity of adding at least the graces of mouldings and paneling.

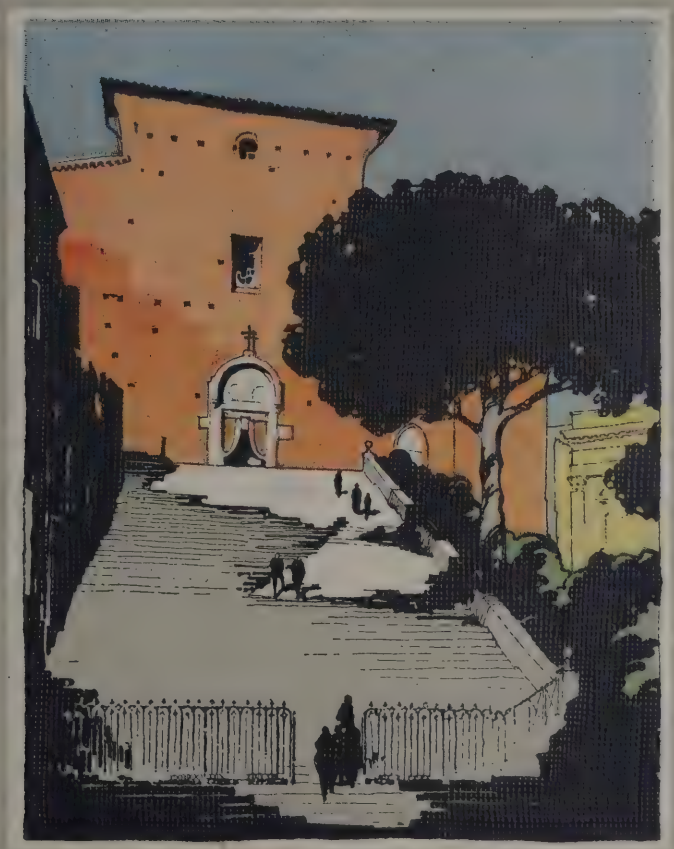
The garden in which Owlpen Manor House is set, and with which it is so inseparably associated, is one of the finest and most satisfying things of its kind anywhere to be found. In actual area it is not large, but its form and structural planting have produced results of the utmost distinction. Near one end of the principal front of the house is the so-called "ballroom," parts of whose walls appear in several of these illustrations. The "ballroom" is a rectangular space of greensward—quite large enough for dancing on the green and other out-of-doors festivities—completely enclosed by high and dense walls of mixed boxwood and yew. Doors are cut through these thick walls of greenery. Along the tops of the walls at intervals are hemispheres, accurately shaped and kept trimmed with unerring precision. The whole "ballroom" is a masterpiece of structural planting and topiary propriety. Separated from the "ballroom" by a graveled walk and a steep bank is another rectangular enclosure, of almost equal size, walled in by low hedges of boxwood, shaped and punctuated at intervals by great cylinders or drums of closely clipped yew. Fortunately, neither the "ballroom" nor the second enclosure has ever suffered neglect, and together they furnish a thoroughly convincing justification for the employment of the ancient topiary art in garden making. Topiary work of this sort supplies an architectonic quality that vastly enriches the garden, and nothing can ever take the place of it. Whimsical conceits, such as peacocks and dragons in yew, can be added if individual fancy calls for them, but, after all, they are merely playful incidents; the real fundamental value of topiary work is entirely structural in function.

Next above, on the steep slope of the hillside, is the rectangular flower garden. The whole garden layout, including the "ballroom" and the second boxwood and yew enclosure, consists of four rectangles of different sizes. It is all absolutely straightforward and simple and completely convincing in its coherence of form and logical arrangement. The whole scheme affords an illuminating example of definite and reasonable plan in garden design without any approach to that thing miscalled "formality," which seems to inspire so many with a sort of dread.

Great Hall, Owlpen Manor House, Gloucestershire

F.a.

THE ARCHITECTURAL FORUM



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BOOK DEPARTMENT

A Study of the Old Buildings of Normandy

THIS work is the first of a series of four in which close study is given to old buildings in the ancient French province of Normandy, now divided into the five departments of Seine—Inferieure, Calvados, Eure, Manche, and Orne, and particularly in the ancient capital of the province, Rouen. With rare architectural taste and judgment the author has selected the finest and most interesting of the old buildings,—cottages, farm houses, country mansions, halls and market places, ancient *manoirs* and town houses, all structures in which Normandy is still rich. Few of the architectural types which just now are being written of possess quite the intimate charm and naïvete with which the old French builders knew so well how to invest their structures. They seemed to possess by instinct rare skill and discrimination in disposing their buildings, in managing their roof lines, chimneys and fenestration and, above all, in giving to their wall areas, whatever might be the materials used, interest and variety. The plans of old French buildings,—particularly domestic structures,—as many writers have pointed out, are not always adapted to use in America; they were built for use in another land and in a wholly different age, and for life which differs much from what obtains today. But plans can be adapted, modified or improvised with little violence done to either the letter of the spirit of exterior design.

The text (in French) consists of a thoroughly documented study of the gradual development or evolution of the half-timbered form of building, which in this part of France seems to have reached its highest expression, and study likewise of the use in building of stone, wood, brick, flint, schist and granite, many of these materials being often used in the same structure. The work, as a whole, constitutes a rich addition to the number of books on architectural design which, particularly during the past few years, have been appearing, and this particular volume abounds in suggestions of the greatest value to architects, suggestions of practical importance.

LES PROVINCES DE L'ANCIENNE FRANCE; La Normandie; Recueil de Documents d' Architecture Civile de l'Epoque Medievale au XVIII e Siecle I. Seine Inferieure. Text and 70 collotype plates 13 x 18 ins. Price $15. Librairie d' Art F. Contet, 9 Rue de Bagneux, Paris.

The Smaller Houses *and* Gardens *of* Versailles

By Leigh French, Jr. and Harold D. Eberlein

FOR the moderate-sized American suburban or country house there is nothing to follow in the way of a type at once more beautiful and more practical than the seventeenth and eighteenth century French houses of the same kind. The type possesses that graceful balance in the way of exterior design and that slight degree of formality of interior which is being expressed in current domestic work of the same character; and from all the domestic buildings of seventeenth and eighteenth century France there is nothing which offers a more fruitful basis for study than the smaller villas built near Versailles for the attendants of the French court. These buildings possess in an unusual degree just those qualities in the matter of design now most sought for in America.

THIS volume, prepared by two students of French and American architecture, is a practical study into the adaptation of the simpler French forms to American conditions. There is not one of the many villas illustrated which does not afford abundant suggestion in the way of exteriors to present-day architects, and the interiors with their simple and graceful disposition of wall paneling, mantels, and stairways abound with suggestions for working out interiors to accord with the expression given by the buildings' exteriors. Plans in many instances are easily adapted for use today, and the arrangements of the gardens and other outdoor areas offer suggestions for making these important adjuncts to American suburban or country houses heighten the character and interest of the buildings themselves.

202 Pages, 9¾ x 11¾ Inches. Price $6.

ROGERS & MANSON COMPANY, 383 MADISON AVENUE, NEW YORK

NEW BACKGROUNDS FOR A NEW AGE. By Edwin Avery Park. 225 pp., 6¼ x 9¼ ins. Price $5. Harcourt, Brace & Co., New York.

SEVERAL thoughtful writers have considered lately the subject of what might somewhat broadly be called "æsthetics,"—forms of architecture, sculpture, painting, music, drama and the arts more or less closely related. All the arts might be said to be in a state of transition, and it is useful indeed to have the tendencies of today outlined or projected vividly against what has been the history of these arts since the Renaissance, if not since the Middle Ages. This has now been done anew, and in this volume an Assistant Professor of Design and Architecture at Yale University dwells upon the more or less current work in the field of art, draws certain comparisons, and attempts to establish some definitions. It could hardly be denied that since the Great War a spirit of great unrest has prevailed; the world seems now to be demanding the new in exchange for the old in every department of effort, and it regards with intolerance the voice of experience which counsels against radical change or the trying of what appear to be experiments.

Those who guide the tendencies of present-day designing in furniture, fabrics and all the other accessories of decoration face a problem which is difficult indeed. Upon one hand there is arrayed a large part of the modern world, impatient with and tired of the work of the past and demanding a new and wholly fresh form of expression; upon the other hand stands public opinion, strongly entrenched behind a conservatism in taste which has been built up during long centuries, opinion distrustful when not actually derisive of the examples of these new and advanced forms of art which it sees on every hand,—work so bizarre, extreme and extravagant that it would quickly pall and would lead one to turn for relief to forms which have abundantly proved their enduring value. In this volume Mr. Park has presented these modern tendencies at what is probably their best, and yet it is rather doubtful if the cause of advancd modern art has been greatly furthered. The illustrations, of which the volume contains many, seem to be calculated to dampen the ardor of even the most enthusiastic adherent of the modern school, and most people would find it difficult, if not quite impossible, to live in peace in some of the interiors shown; one would welcome, it would seem, a change to the most conservative interior of which the mind could conceive. The volume is valuable, however, not only by reason of its carefully written survey of the history of æsthetics and design, but also by reason of its presentation of a passage in this history which, even though it proves to be transient and of brief duration, deserves to be properly appraised and recorded.

NEW TOWNS FOR OLD. By John Nolen. 177 pp., 5¼ x 8 ins. Price $3. Marshall Jones Company, Boston.

UNLIKE certain other forms of art, which appear to be animated by a spirit of extreme restlessness, that of landscape architecture or town planning seems to be traveling paths of conservatism which lead to notable achievements. This art in fact is teaching the world much needed lessons, and it is making wise use of resources which at times are great and at other times meagre. In some instances it creates beauty wholly anew, planning and developing new villages or industrial towns or creating civic centers which possess architectural distinction and charm of an advanced order, while at other times it diagnoses the maladies which greed or indifference has inflicted upon localities, undertakes their treatment, and not infrequently restores them to health and clothes them with beauty which was never theirs before.

This volume, by a widely known worker in the field of town planning, reviews some of these achievements. It dwells upon what has been done in planning villages in Europe and America for large manufacturing concerns and in planning for existing towns those additions which are necessitated by growth and expansion; and what is perhaps even more interesting, it brings to attention certain instances in which unsatisfactory conditions have been corrected, where, by the removal of ugly structures which have been permitted to encroach, whole districts in old communities have been given distinction and their fine buildings given proper settings. Town planning and landscape architecture are closely and intimately related to architecture proper,—so closely and intimately in fact that architecture could never attain its complete development or stature without their powerful aid. This volume indeed possesses an importance upon more than one count, and a study of its contents would greatly enlarge the working knowledge of almost any architect.

SPANISH MISSIONS OF THE OLD SOUTHWEST. By Cleve Hallenbeck. Plates and 184 text pages. 8 x 10½ ins. Price $7.50 Net. Doubleday, Page & Co., New York.

MUCH has been written of the ancient missions of the southwestern states, and historians as well as architects have studied the details of their origin, prosperity and decline as well as the relics in the way of structures or ruins which even yet attest the skill as architects and builders of the Spanish pioneers and their Indian neophytes. The Spanish priests well knew how to make the most of the most meagre resources. Here in what was a primeval wilderness they built structures some of which have survived the vicissitudes of centuries. Among these religious,—Franciscans, Jesuits, Dominicans and others,—were men who had been architects, builders or engineers before they became priests, and their knowledge they turned to excellent account, while their skill as engineers made possible feats of irrigation which caused many a desert place to blossom like the rose. Their churches, chapels and conventual buildings, built of adobe or of brick stuccoed over, were given in many instances a surprising degree of beauty; ornament, generally of a more or less florid Baroque type, bore testimony to the relations of the missions to Spain, and the opportunities for ornament offered by sculpture and painting were by no means overlooked.

In this work there is added one more volume on the history of these missions, carefully drawn maps giving the locations of missions or mission stations, many of which have long since wholly disappeared. The interest of architects will be chiefly in the illustrations, reproduced from recent photographs, some proving that a few of these venerable buildings still possess their primitive charm, while others show that zeal in the way of restoration or else of embellishment is often followed by results unfortunate from an architectural point of view.

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FROM the rich pages of *Country Life* (London) there have been gathered the illustrations which make up this review of the modern English garden,—not the vast formal garden such as is found on almost every great English estate, but the garden of moderate or even of small extent, in a suburb or in the real country,—the cottage garden, in fact, famous in England's history. The many views illustrate gardens of several kinds, the term "garden" being used in a generic sense. Thus there are shown flower gardens, rock and water gardens, as well as many views which illustrate successful handling of gardens on different levels, terraces, gates, sundials, arbors, pergolas, tea houses, fountains, statuary and benches or seats, and other details which enter into successful garden making. The excellent taste displayed in selecting the illustrations which make up the volume and the practical value of the work to architects and landscape architects render it of the first importance.

192 pages, almost entirely half-tone plates; 8½ by 11 ins. Price $8.50

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ENGLISH ARCHITECTURE IN A COUNTRY VILLAGE. By Arthur H. Plaisted. 42 pp., 5½ x 8½ ins. Price $1. Longmans, Green & Co., New York.

IN many an old English village there are buildings which make possible a study of almost all of the periods of English architecture. This is particularly true of small rural communities which have never been disturbed by modern progress and where large estates have been long in possession of a few families. This little volume deals with Medmenham, Buckinghamshire, a small village on the Thames, with some of its domestic buildings, and particularly with its parish church, the walls of which are of twelfth century workmanship, with windows of the Late Perpendicular type, substituted during the fifteenth century for smaller windows of the Norman order. The volume is illustrated by numerous sketches which, with considerable historical and archæological data, give the work particular interest.

PICTURESQUE GREAT BRITAIN. With Introduction by Charles F. G. Masterman. Text and 304 plates. 9¼ x 12 ins. Price $7.50. Brentano's, New York.

IN any work upon such a subject an architect is likely to find much of interest and value. Countries such as England, Scotland and Wales, built up by the slow growth of centuries and composed not so much of vast cities as of towns large or small and of villages and hamlets, afford a wealth of architectural interest in the way of design. Just so with this volume, which, while not intended especially for the use of architects, might well engage their attention. Among its more than 300 plates there are many which show not only old manor houses, but beautiful yet little known village churches, and streets in villages or small towns which offer valuable suggestions in the way of grouping buildings. If a few plates were to be selected for particular praise they might be one or two of Penshurst Place and one of the "Royal Crescent" at Bath, more than a little reminiscent of Regent Street's now wholly demolished "quadrant."

MEASURED DRAWINGS OF EARLY AMERICAN FURNITURE. By Burl N. Osburn and Bernice B. Osburn. 32 pp., 8½ x 11½ ins. Price $1.80. Bruce Publishing Company, 354 Milwaukee Street, Milwaukee.

THE very popularity of Early American furniture and that of the earlier and simpler English pieces from which the American pieces were made has led to countless attempts at reproducing them. Some of these attempts have been extremely successful, the pieces possessing every detail of value in the way of workmanship and having, when not unduly "antiqued," much of the feeling of originals which, if they could be had at all, could be purchased only at great cost. In fact it might be found that many concerns which are now reproducers of early furniture upon a large scale had their beginnings in just such efforts, success and interest in the work leading craftsmen on until what was entered upon as an avocation or diversion became a profitable form of business. This work, whether published for the benefit of the amateur craftsman or for that of the experienced workman, is valuable indeed, containing as it does practical working drawings of Early American pieces such as tables and chairs of different kinds, chests, dressers, beds, clocks, mirrors, etc., which of course are of just the kind now most desired.

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SCHOOL BUILDING PROBLEMS. By George D. Strayer and N. L. Engelhardt, Professors of Education, Teachers' College, Columbia University. Price $5. Bureau of Publications, Teachers' College, 525 West 120th Street, New York.

PLANNING school buildings is deservedly receiving careful attention and study from several points of view. The importance of the matter is such that it affects the municipalities which must provide them, the tax payers who make them possible, and the teachers and pupils who must use them, no less than it does the architects who plan and the builders and contractors of one sort or another who construct and equip them. This importance has brought about study of the problem from still another point of view,—that of those whose specific function it is to train educators and to view conditions from standpoints more detached, perhaps, than can be done from the points of view of those just enumerated, and this is producing published works which render available the results of thought and study and the results of experience in many places where schools have been under observation and used as the basis of research.

Such a work is that lately put forth by Teachers' College, Columbia University. Professors Strayer and Engelhardt are well known for their writings on subjects connected with education. A year or more ago they published "Problems in Educational Administration," covering the entire range of educational administration and dealing with the issues which in their experience had been found most significant, and this later work should receive the close study of all concerned, and particularly architects, since architects are not at all infrequently expected to give advice and guidance on matters far removed from architecture. That their study has been searching and thorough may be judged from only a few of their 18 chapter headings: Population Studies; Number and Locations of School Buildings; School Building Programs; Selection of the Architect; Plans and Specifications; Building Contracts, and Financing Building Programs. Each of these and of many other subjects is adequately and most helpfully discussed, and several are illustrated by means of diagrams, plans and tables, while a complete bibliography adds to the volume's helpfulness.

ARCHITECTURE AND DEMOCRACY. By Claude Bragdon. 183 pp., 5½ x 8½ ins. Price $2.50. Alfred A. Knopf, New York.

AS the mother of all the arts, architecture touches almost every department of life, and these contacts suggest many thoughts which form profitable matter for discussion. It is helpful sometimes, during interludes in the hurry and struggle of present-day living, to give consideration to some of the matters which relate to Architecture's place and function in the world and the far-reaching influence which it exerts on life. Much of this is done in this volume, consisting partly of new matter and partly of a number of Mr. Bragdon's stimulating essays which have been published before. One of its most interesting passages is the chapter entitled "Prophet of Democracy," an essay appearing now for the first time, wherein Mr. Bragdon pays tribute to the late Louis H. Sullivan, a man whose influence on American architecture was great and which in an analysis of American architecture made at some time in the future may quite possibly seem to be wider than it does today.

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70 pp., 10½ x 13½ ins. Bound in cloth. Price $10

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The ARCHITECTURAL FORUM

VOLUME XLVII — *Established 1892* — NUMBER 3

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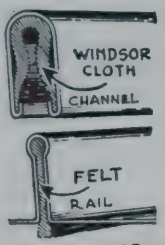

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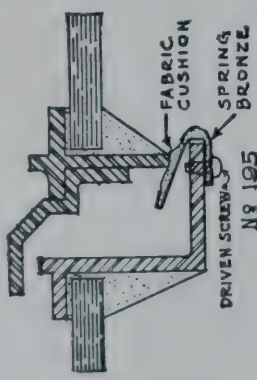

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THE EDITOR'S FORUM

Martin Roche: 1855-1927

BORN in Cleveland, of Irish parents, August 15, 1855, Martin Roche came with his family to Chicago a few years later. His early education was obtained in the Chicago public schools, with private tutors, in the courses of study given by visiting men in the old Central Music Hall, and at the Art Institute. Apprenticed at 14 to a cabinet maker, he learned the trade, and through his earnings he advanced his training, entering at 18 the office of W. L. B. Jenney, where he found a group of young draftsmen many of whom were destined to become nationally prominent as architects; among the number he found there was William Holabird.

In 1881 Mr. Roche left Mr. Jenney's office and entered into partnership with Holabird & Simonds, forming the association later to develop into the firm of Holabird & Roche. He was still designing furniture and entering competitions of designing of all sorts when cash prizes were to be awarded. Many of these he won, several in succession. The money went into more courses and into living expenses. Long, lean periods there were in building, and since there were no buildings to design, Mr. Roche busied himself designing furniture. The first building designed by Holabird & Roche of which there is any record is a two-story structure at the southeast corner of Laflin and Van Buren Streets in Chicago,—even today a dignified, simply treated building of brick with shops on the ground floor and apartments above, admirably adapted to its purpose.

Then there came to American cities the necessity of adopting new building methods. To build by the "taller the building the thicker the wall method," the area between walls was becoming too scant for profit. The Tacoma Building, designed by Holabird & Roche, was the first of what was known as "Chicago construction," now spoken of as "skeleton construction." It was the first of a type of building that was to transform American cities, American industry and, to change, in a way, the course of the world, the beginning of what will come to be looked upon as a great achievement in a triumphant age. Out of whose mind came the idea is not known; be it said that neither Holabird nor Roche boasted its conception. But theirs was the courage to design and construct a building that was to crumble to the street,—so said the bystanders. It has been decided in the courts that Martin Roche was the originator of the plan of sub-basementing, now in use and in some ways as revolutionary as skeleton construction. The total amount of money involved in the firm's work at the time of Mr. Roche's death has been conservatively estimated at between $350,000,000 and $400,000,000; its largest single building has been the Stevens Hotel, Chicago, just completed.

Lucian E. Smith, now in independent practice in New York, thus pays tribute to Mr. Roche. "It is my privilege to have known Martin Roche for nearly 30 years. For about two years I was in his office, and since that time I have always counted him a helpful friend and sympathetic adviser. His death leaves his friends bereft and the profession, of which he was such a brilliant figure, the poorer for having lost so great an artist. Throughout his life he was a serious and profound student of architecture and art in all its phases. His love of painting was shown by his consistent acquisition of fine pictures and drawings. His mind at the same time had a definite practical trend which stood the firm in good stead in solving the infinite variety of practical investment problems which for years formed the bulk of its work. He was an indefatigable worker and studied his designs over endlessly, seeking always the best solution. Although he worked in any style, I have always felt that it was Gothic that gave his imaginative nature the most pleasure. The University Club in Chicago is a striking example of his application of this style to modern requirements. He believed in fine things and would go to any lengths to achieve the results that he secured."

Mr. Irwin L. Sperry, manager of the Jefferson Standard Building at Greensboro, N. C.

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Volume XLVII SEPTEMBER 1927 Number 3

The Designing of Auditoriums

By R. H. HUNT

TODAY more than ever before the municipal or community auditorium is a subject for architectural consideration. Whether this is coincident with the enlarging emphasis being given to community-wide projects, such as are found in the realms of religion and education, or whether it is the outgrowth of an increasing sense of civic pride is not so easy to determine,—and the cause is not as essential as the fact that this condition everywhere exists.

Certain it is that civic pride as expressed through chambers of commerce, boards of trade and a multiplicity of luncheon clubs is now greater than ever, and it is equally certain that more community-wide projects are being proposed and developed than in any period prior to 1917. This existing condition has a bearing on the question of auditoriums, since it is through this type of building more than through any other that this civic pride is finding itself made articulate. This sense of pride is used or capitalized to express appreciation felt for one cause and another. One of the most frequent of current reasons offered for the erection of auditoriums is that of supplying a memorial to the soldiers and sailors and other participants in the World War. It is not within the scope of this article to defend or oppose the erection of buildings of one kind or another for such purposes. Granting that in such a case a city may be making patriotic impulses serve utilitarian ends, it remains true that no public project is more laudable from a community standpoint than that which serves to unite all elements of the community and thereby to afford opportunity for community assemblies. Such assemblies presumably tend to make life more worth while and enjoyable. It will doubtless be accepted as a fact that the municipal auditorium finds its chief justification, its *raison d'etre,* if one pleases, in its potential ability to serve all the community and to serve it fully and in an ever more efficient manner. The auditorium is an important community adjunct.

Selecting the Site. It naturally follows that choosing an auditorium site should be considered a very important first step. It must be accessible to those for whom it is planned, and accessibility with the least inconvenience to the majority makes it desirable that the location be as near the center of population as possible. If business considerations are to enter in very strongly, because of offices to be included in the building, it is preferable that the site be within easy distance of the chief business district of the city. From the point of view of the residents, many of whom in the nature of things will go from their homes to the auditorium rather than from their places of business or the shopping district, it is not requisite that the site be located down town. If the auditorium is to serve as a community center within itself or as one of a group of buildings, the site must be selected with due consideration to the surroundings, approaches, and general conditions. Without doubt the site should be on or very near to important streets and thoroughfares. The close proximity of street car lines and bus lines involving the minimum number of transfers, and of streets for automobiles is vital. The ever-recurring and ever more vexatious problem of providing automobile parking space demands that the structure be placed within a reasonable distance of streets and housing facilities lending themselves to parking. Sites near other buildings in which simultaneous entertainments are likely to be held should be avoided, so that undue congestion will not occur. Generally, theater and hotel zones are to be shunned in selecting an auditorium site. To assist in caring for the parking problem, some of the largest auditoriums are now including parking space within the buildings themselves, this being area convertible for other purposes as well. This space is often on the ground floor, under the main auditorium.

The Multi-Purpose vs. the Limited Purpose Building. If the auditorium is to serve the entire community, it must be far more than one large room designed for very limited purposes. The very size of the building, as compared with other structures in the city, will as a rule make possible the inclusion of arrangements and features giving it a multi-purpose design. A community is composed of many elements differing widely both as to interests and needs. "Community" is a word to conjure with in these days, and many economists are tearing their hair trying to find a suitable definition of what is meant by the term. Regardless of such definitions, we know that a civic enterprise, such as the auditorium under consideration, must be designed to provide for all those things which large groups are

Auditorium, Memphis
Pfeil & Awsumb, Architects

likely to do together. The presence of other buildings in the city makes it imperative that the auditorium shall be large enough to be used for practically any and all purposes for which other buildings have been separately and more particularly designed. There will always be found, for instance, comparatively large church auditoriums, large public school or college auditoriums, and perhaps others. Seldom if ever will any one of these serve more than the immediate constituency for which it was planned. If ever all the congregations of a given denomination or of several denominations should desire to come together, as they frequently do, the city auditorium serves where their own separate buildings could not. If a school gathering embracing more than the student body of a single school is to be held, the city auditorium stands with its wide variety of arrangements as an invitation for such a meeting. In other words, the limited type of municipal auditorium is much more likely to meet with competition and therefore be less frequently used and consequently looked upon as serving a far less definite function than the auditorium serving many purposes. Except in very small localities, the auditorium of the multi-purpose type is being erected today rather than that of the limited or restricted type, which is far less practical.

Some Uses for the Building. To the architect the building designed for many purposes offers a more attractive problem, even though it is much more difficult, than the simpler building. To design a structure adapted to a given purpose, such as public lectures, which will at the same time serve a far different purpose, such as an athletic contest, is far from a one-day study, both as to arrangement and as to appearance. In the first type of program, hearing is a prime requisite, with seeing somewhat secondary; in the second, seeing is all-important, while hearing is somewhat secondary. Or to take another matter as a further illustration of difficulties which will challenge the imagination and intelligence of the architect, if the auditorium is to be utilized for dramatics and grand opera, those in attendance are in a sense on dress parade and they want and expect to find their surroundings beautiful and charming, even as they naturally fancy themselves to be. On the other hand, if it is a political gathering, held perhaps during the hectic days of a blistering summer, the delegates will prefer to be in their shirt sleeves, hot and perspiring, with evidences of disorder on every hand. How else can they make themselves believe that they have truly represented their constituencies with all the fervor of their souls?

As to the actual uses for a multi-purpose building, this list, prepared by the manager of such a structure in a city of 150,000 people, may serve to illustrate some of the things which should be given consideration when designing a building of this kind. This list covers a five-year period, 1922-1927, the time in which the building has been in use: organ concerts; musical comedies; dramatic shows; city-wide celebrations of several kinds; special motion picture shows; amateur dramatic presentations; banquets for from 500 to 3,000; lectures; art exhibits, and conventions and exhibits incident thereto; religious meetings, including city-wide revivals; oratorical contests; notable funerals; sales meetings; dog shows; athletic contests, such as basketball; lodge ceremonials; concerts; club meetings; flower shows; trade shows, including those of automobiles, food, and better homes; dances; school commencements; grand opera;

Auditorium, Macon, Ga.
Egerton Swartwout, Architect

cooking school conventions; physical education demonstrations; Easter egg hunts. Allowing for seeming duplications, the list includes 25 rather different purposes, and reports indicate that all of these very varied demands have been very successfully met.

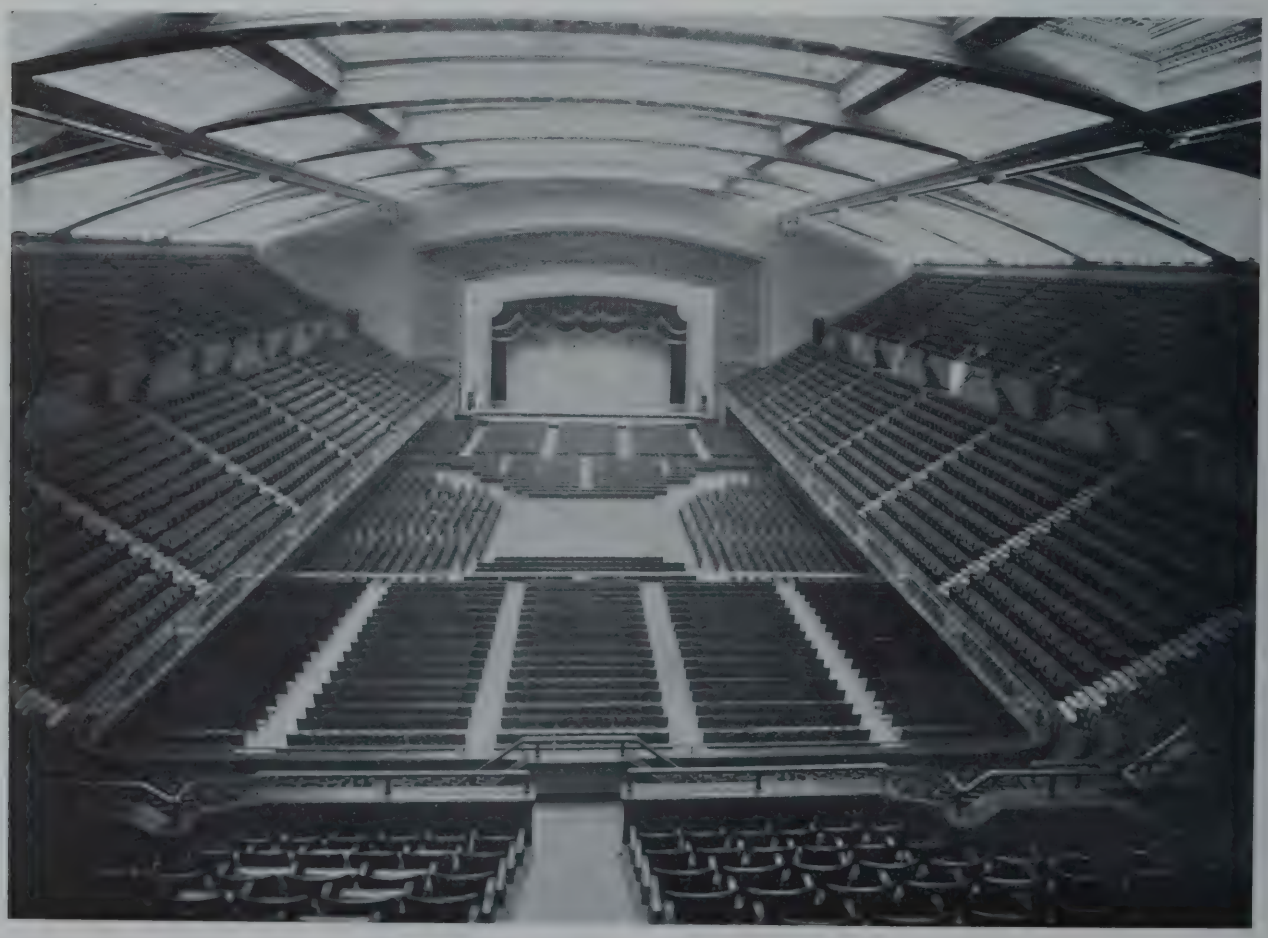
Special Requirements. There must be special consideration given to certain features which tend to fit the building to varying types of uses. It will be conceded that one of the outstanding purposes to be kept in mind in designing the auditorium is that of public lectures. The lecture or address calls for perfect acoustical treatment and arrangements. Entrances should be well away from the speakers' rostrum; floors should be treated so as to make a minimum of noise when the never failing late comer insists on entering, and the seating plan should be ever mindful of the comfort of those who are to sit for an hour or more without opportunity of changing positions. Large gatherings, such as conventions and conferences, demand that speakers other than those on the stage may be heard without the too-frequent reverberations common in such assemblies. With the now very general use of speaking instruments, such as amplifiers, it is not difficult to arrange even the largest auditorium so that everyone may hear. This, however, does not lessen the desirability of making the architectural plans as nearly perfect as possible, so that such extra arrangements do not have to be used except when the capacity of the auditorium is abnormally taxed or when people are standing on the outside. Meetings of almost any nature are given wide publicity today; this calls for seats for correspondents, and for telegraph, telephone, and radio connections, and such buildings would never be complete without ample anterooms, committee rooms, and lobbies if they are to fully meet all demands.

When dramatic and operatic performances of a professional nature are to be given, full stage settings are required; when these are of an amateur nature, much simpler arrangements will suffice. This difference in need may be met by proper treatment of the stage and its accessories, but it is much more satisfactory to have a smaller room properly equipped with its own stage; this secondary auditorium may be termed the "music hall," the "little theater," or given any other special designation desired. Concerts and recitals make it imperative that the stage shall be well developed so as to properly project sound from any and all points at which the performers may be located. Musical comedies, Boy Scout and Girl Scout demonstrations, dramas and operas make necessary special lighting effects. Dances, drill ceremonials, and other gatherings with much movement involved, call for large free space; this is usually provided in the arena. The floor must be level and easily cleared of all seats and other appurtenances. The elevated floor, necessary for the arena space when used for ordinary seating, should be a false floor, lending itself to removal in sections. Athletic contests call for level floors; a basket ball court should be a minimum of 40 feet wide and from 70 to 90 feet long. Conventions, revival meetings, school commencements and similar assemblies involving large audiences demand the fullest seating space and make necessary a careful consideration of sight lines affecting view of the stage or rostrum.

Easy access and egress to and from all seats constitute a feature fully as important as the hearing; it must be possible to enter the auditorium from both sides at several points as well as from the main en-

Municipal Auditorium, Minneapolis
Croft & Boerner, Inc., Architects

trances through the lobby. Space devoted to corridors on both sides of an auditorium will serve not only for circulation but will afford additional space for booths and other supplementary purposes in many of the gatherings. When the building houses headquarters of chambers of commerce, the American Legion and perhaps clubs, it is desirable that restaurant facilities be available. If the ground floor serves as a great banquet hall, full kitchen arrangements are needed. If the building is in any sense a memorial structure, special consideration should be given to the organizations identified with the memorial. For instance, if it is a World War memorial in any sense, a room or rooms should be planned for the meetings of the American Legion. While it generally happens that Boy Scout troops



Interior, Municipal Auditorium, Minneapolis
Croft & Boerner, Inc., Architects

Municipal Auditorium, Cleveland
J. Harold MacDowell, Architect

will have their meeting places for their more frequent meetings, they will need occasionally a large hall in which they may gather for city-wide demonstrations and meetings. Their general headquarters room need not be large, but such a room may very well be included in a civic building such as the auditorium. Organ recitals are much in vogue today, and most auditoriums have one or more such instruments. The organ console should be placed within sight of the audience and preferably designed on a platform adapted to raising or lowering as need may require. The orchestra pit likewise should be designed so that it is visible to a very large number of those present. If the stage should need to be enlarged beyond already ample dimensions, the pit may be of the type which is arranged for raising and lowering. This is

Interior, Municipal Auditorium, Cleveland
J. Harold MacDowell, Architect

Theater in the Auditorium, Oakland, Calif.
John J. Donovan, Architect; Henry Hornbostle, Consultant

not always essential in an auditorium, but it is worthy of consideration, depending largely upon circumstances. It often adds much to a building's flexibility.

Seating Plans. It is when the planning of seating arrangements for the main auditorium as a whole arises that interesting difficulties are likely to be encountered. Of course everyone knows that persons going to public meetings desire and expect to both see and hear. Planning a room seating from 1,000 to 12,000 or more persons is thought-provoking for the architect who is determined to serve his profession while he is also serving those who are to use the building. A room capable of seating 10,000 may be perfect acoustically when completely filled, but it does not follow that it will be likewise perfect when only 2,000, 4,000 or even 6,000 persons are present. Providing special acoustical treatment skillfully used is the only solution for this perplexing problem. The room may be beautiful and it may be pleasing in general, but if a person or any considerable number of persons are so unfortunate as to be those sitting behind other persons or columns, an attitude of dissatisfaction will be created; the unfortunates leave the building with the feeling that the structure is a failure, and it is so far as they are concerned,—for the time being at least. This applies whether the poor seats are in the arena, the dress circle, in a box, or in the balcony. The shape of the auditorium should be not more removed from the rectangular than the proportion of three to four. The seats on the arena floor should have a graduated rise, having the rise begin about one-third of the distance back from the stage and sloping in keeping with the size of the room. There should not be any steps on this floor. While the arena seats will have to be movable, they should be tied together in groups of five to eight, so as not to make possible an easy confusion in time of hurried exits. When these seats are to be stored so that the floor may be cleared for dances and drills or athletic events, it should not be necessary to remove them a great distance. A well developed opening through the arena floor to the ground floor below, easily closed when not in use, has been found most satisfactory for this purpose. This same opening serves as the entrance to a stairway to be used by the public when automobile shows or other large exhibitions require more floor area than any single floor is likely to afford.

The dress circle or tiers of seats surrounding the arena should extend back to the side aisles; this space should be broken by secondary aisles reached by entrances from the corridors, giving the dress circle space sectional arrangement and protecting the circulation from congestion. Each row of seats should be on a platform or floor about 2 feet, 8 inches wide. The steps leading to these seats should have risers of from 6 to 7 inches, with 12- to 16-inch treads. The treatment of the boxes and loges differs radically in appearance and design from that in professional theaters, even though at times they are expected to serve the same purpose, such for instance as grand opera performances. Boxes and loges should be simply treated, no effort being made to make them appear ornate; they must yield to the general surroundings of the auditorium and not primarily correspond to the stage accoutrements. The balcony will usually afford about one-third of the total seating capacity of the main auditorium; balconies should be free-swung or else supported with minimum-sized columns. Extreme height of balcony seats should always be avoided, it being best to have them extend back on a gradual rise. Care should be exercised to prevent balconies from obtruding unduly over dress circle seats, and they should not extend over the arena space at all. Sight lines require adequate study at this as well as other points if the auditorium is to be really serviceable.

Circulation and Control. Consideration of circulation and control begins with the main entrances and lobbies. Conservation of space in the design of a building should never begin at this point. Unlike structures devoted only to theatrical performances, it is not essential that ticket booths be placed outside of the lobby, but they should be very conveniently reached and away from congested areas. There will

be more occasions when no tickets are required to enter the auditorium than otherwise. The lobby should be spacious and highly pleasing. The extreme limits of decoration and ornamentation now used in outstanding motion picture places and theaters are not called for in this type of building. However, the architect has unbounded opportunity for treatment of the lobby. It is a frequent and appropriate treatment to make the lobby serve as a special memorial hall. If it is in reality a memorial building, this space affords suitable and ample area for emphasizing this by means of tablets, portraits, sculpture effects, paintings, or other striking features. The lobby gives a definite, even if brief, pause before entering the extended and far-reaching spaces of the auditorium itself. The fact that the lobby will be used as the chief place for entrance and exit demands that every precaution possible be taken to make circulation free and easy. Generous allotment of floor area to the main lobby will be far from wasted. Stairways in or near the lobby make possible a feature which may either make or mar the entire approach. These main stairways should be wide, with 6-inch risers and 12- to 14-inch treads. Doors should always open out, and double doors are always best for main entrances. The main auditorium should be protected from noises in lobbies and corridors by means of double sets of doors. Exits will of course be marked by signs prominently displayed and lighted by independent wiring. It should be possible to completely empty, without undue haste, a building seating 5,000 or more people in less than five minutes; this calls for an exit for approximately every 300 persons. Balconies are to be served by special exits, preferably by outside stairways or independent stairs leading to lower corridors without making it necessary to pass through the main auditorium. Aisles will vary from 3 to 6 feet in width, the former being the minimum width and the latter the approximate maximum. Let it always be remembered that such a building is not unlike a newspaper,—that its life depends on its circulation. Adequate provision will be needed for rest rooms on each floor level. While the building may not be in use every day, it will often be used by large groups, and the peak load will have to be kept in mind in determining sizes of such accessories as drinking fountains, lavatories, toilets, and smoking rooms. Main toilet rooms should be placed on the ground floor, near lobbies used during intermissions.

The Proscenium, Stockton Auditorium
Glenn Allen and Wright & Satterlee, Associated, Architects

Lighting, Heating and Ventilation. The subject of lighting, heating, and ventilation requires much fuller treatment than the limits of this article permit. Let it be said, however, that whether direct, indirect, or a combination plan of lighting be used, it should be possible to easily control the varying degrees of light required for different purposes. This applies not only to the stage but to all parts of the auditorium; from a very dim to a very bright lighting effect with several intermediate degrees should be possible. The heating of a large building of this type, taken together with the ventilation, offers problems for the most skilled engineers. Even with a well developed system of cross ventilation, there will be required supplementary air-cooling plans. The heating plan must give special thought to the upper and lower sections of the auditorium, so that a uniform temperature will prevail throughout. It has not infrequently happened that one section was too cold while the other was too hot, all because due consideration was not had for insulation, proper distribution of heat units, and circulation of the air in the planning.

The Stage and Its Accessories. The stage in a structure of this type must be of full size and adaptable to every kind of program likely to be put on. It must have a minimum depth of 30 feet and an ample width, varying with the width of the auditorium itself. Edward H. Kearney in writing about the theater stage of the professional type in THE FORUM for June, 1925, says that the stage should have a height of approximately 60 feet to the gridiron. The height of the gridiron above the stage depends on the height of the proscenium arch, and it should be at least double the height of the opening plus 5 feet. And what he says concerning the stage

Municipal Auditorium, Oakland, Calif.
John J. Donovan, Architect; Henry Hornbostle, Consultant

requirements applies here very largely also: "The stage requirements are an asbestos curtain and rigging; three 'oleos' or rapidly working curtains; a picture sheet, and about 45 sets of lines for drops. The asbestos curtain must have a rigging of its own, consisting of a 16-inch sheave and 20-inch hair block, hung on wire cables counterbalanced so that the curtain will descend by gravity under its own weight, the counterweight to run on T-bar guides. Head blocks and sheaves should be placed on brackets, either built into the proscenium wall or securely bolted into it. Rigging for the act curtain is of the same type as is used for the asbestos curtain, but it may be only counterbalanced." In addition to the foregoing, the auditorium stage should be provided with a cyclorama, which is not usually required in theaters. Dressing rooms, either to the rear or at the sides of the stage, will be required, these varying from three to six in number. If a secondary hall or "little theater" is provided, additional dressing rooms and stage accessories will be required for its best use.

Style of Architecture. The exterior of a public

Interior, Municipal Auditorium, Oakland, Calif.
John J. Donovan, Architect; Henry Hornbostle, Consultant

Municipal Auditorium, Colorado Springs
Charles E. Thomas and MacLaren & Hetherington, Associated, Architects

auditorium building affords plenty of room in which the growing genius of American architects may roam and perchance develop. As someone remarked in another connection, the biggest room in the world is the room for improvement. Up to the present time comparatively little that may be termed unique and at the same time successful can be pointed to in the treatment of such exteriors, there apparently having been more roaming than developing. The reason for this doubtless lies in the fact that we have sought to cross symphony halls, theaters, memorials, and churches without clearly realizing that a building embracing arrangements adapted to all of these is capable of being treated in a manner all-embracing without surrendering to a mere conglomeration of them all.

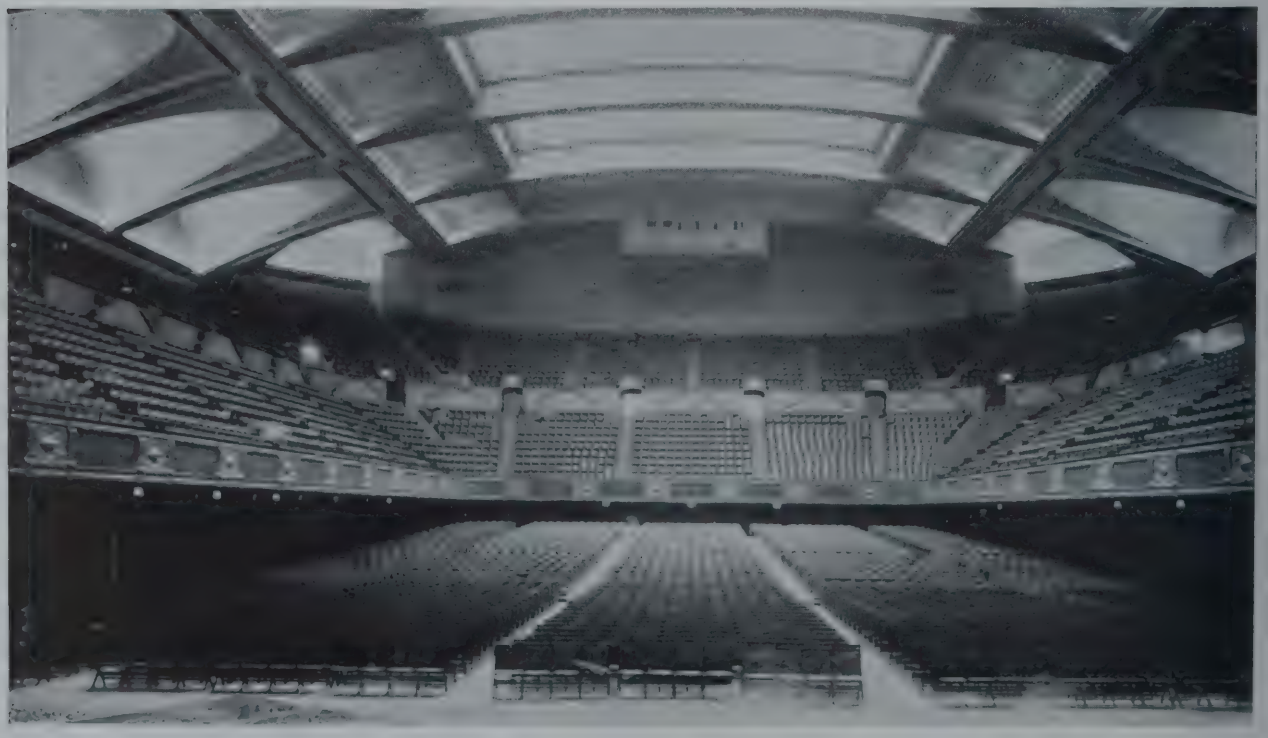
The exterior must be pleasing, but it ought to omit ornateness and the "millinery" adornments so frequently found on facades of theaters, academies of music, and other public buildings, use of none of which can be justified here. Forms which have appeared to yield themselves to most successful treatment include Classic, Renaissance, and particu-

Interior, Municipal Auditorium, Colorado Springs
Charles E. Thomas and MacLaren & Hetherington, Associated, Architects

Detail, Auditorium, Minneapolis

Proscenium, Auditorium, Minneapolis

larly the Italian. The "exposition" type has not given such good results. General characteristics of the exterior should include boldness of detail without cumbersomeness; sharpness of outline without rigidity; expression of interior functions without a potpourri of brilliance; and a beauty of finish without weakness. If the building bears the name of a memorial, there should be definite recognition of this fact in the exterior treatment, and this should not be in any sense of an apologetic nature. The interior design will of course affect the exterior lines, and the exterior should follow the interior plans and give promise of what is to be found when the building is entered. Structural arrangements for large free



Interior, Municipal Auditorium, Minneapolis
Croft & Boerner, Inc., Architects

Detail, Municipal Auditorium, San Antonio
Atlee B. & Robert M. Ayres, George Willis and Emmett T. Jackson, Architects

Detail, Auditorium, Oakland, Calif.
John J. Donovan, Architect; Henry Hornbostle, Consultant

areas for seating react on wall and roof treatment.

Seating Capacity, Cubage, and Costs. A general allowance of from 7 to 8 square feet per person must be made in computing the floor area required. This is sufficient to provide for aisles and spaces between seats. The number of seats to be provided must be governed by local needs and conditions, but it is safe to say that the auditorium should seat from two to four times as many persons as any smaller auditorium in the city; this very matter of liberal capacity will prevent the building's coming into any seeming competition with other auditoriums and will tend to make it a community-wide project. The cubage should be reckoned primarily from the over-all

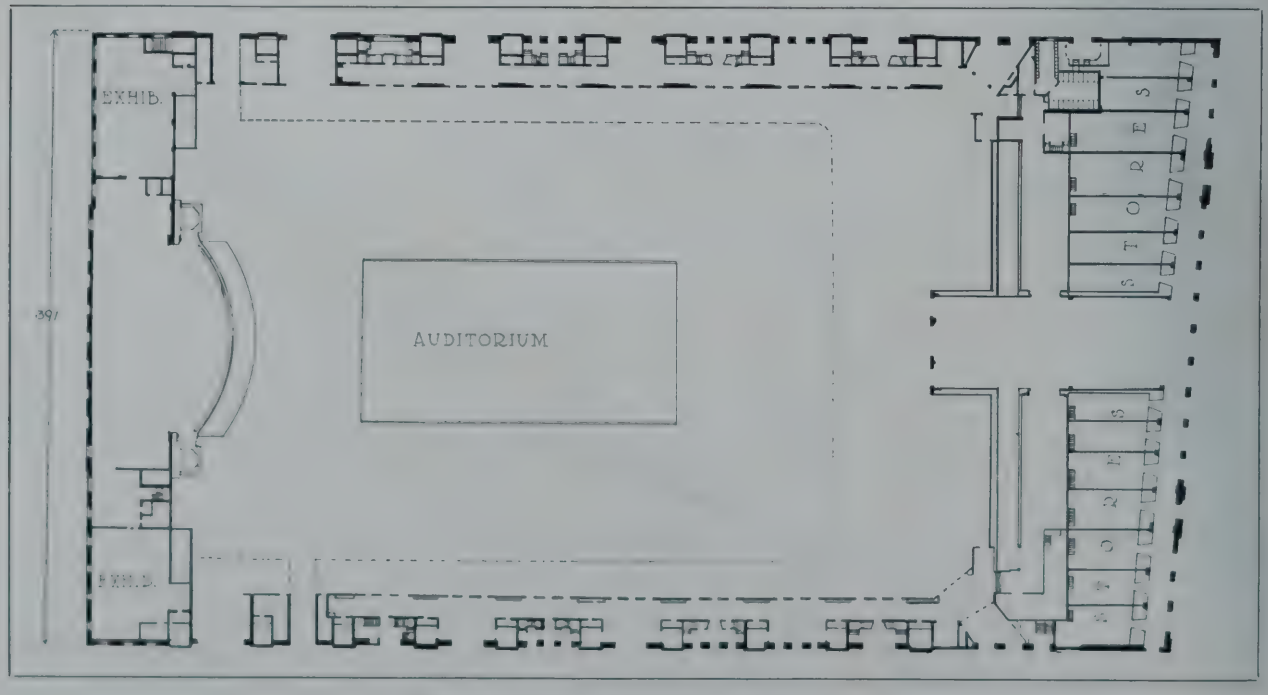
Interior, Municipal Auditorium, Stockton, Calif.
Glenn Allen and Wright & Satterlee, Associated, Architects

Municipal Auditorium, Atlantic City
Lockwood, Greene & Co., Architects and Engineers

dimensions, but in planning for the structure it is essential that the various features should be shown separately so that it may be clear to all concerned as to the proportionate space devoted to each part.

The cost must be based on the governing factors, such as the type of construction, nearness to markets, local labor conditions, and special arrangements. An auditorium of the kind thought of throughout this article should be as nearly fireproof as it is possible to make it. The cost will vary from 25 cents to 50 cents per cubic foot. The Soldiers' and Sailors' Memorial Auditorium at Chattanooga (Plate 33), erected in 1922, cost about 26 cents per cubic foot.

Finally. From all of the foregoing, it should be apparent that the writer, at least, regards the designing and planning of auditoriums as very important and exceedingly difficult, but nevertheless architecturally interesting and worth the while of anyone who wishes to contribute to the welfare of the community and to the advancement of the cause of architecture. Like entering the married state and other life-long ventures, building an auditorium is not to be entered upon thoughtlessly or in a spirit of levity. Happy is the architect who is able to design and bring to a successful completion a great auditorium; present and future generations shall call him blessed.



Plan, Municipal Auditorium, Atlantic City
Lockwood, Greene & Co., Architects and Engineers

Acoustics in the Design of Auditoriums

By VERN O. KNUDSON
University of California

SECURING satisfactory acoustics in an auditorium is a straightforward engineering problem. If it is worked out in accordance with known facts, the outcome is determinable and can be made to meet the most exacting requirements. There is no warrant for the superstition or belief, still held by many, that the acoustical qualities of an auditorium cannot be known until the building is completed. It is true that difficulties arise during the designing or the construction of an auditorium, but there are devices the use of which adjusts the difficulties and secures entirely satisfactory results. It is the object of this paper to discuss these devices in a simple but thoroughly practical manner, and to present some results of research which have established the soundness of the fundamental principles upon which the securing of good acoustics depends.

In order that an auditorium have good acoustics, certain details should be looked after in the design:

1. The shape and size of the auditorium should be such as to secure adequate loudness of speech or music in all parts of the room.
2. The walls and ceiling should be arranged and treated so as to eliminate every possibility of there being echoes.
3. Disturbing noises, whether of outside or inside origin, should be reduced as much as possible.
4. Reverberation in the auditorium, which is controlled largely by the nature of the materials used for the interior, should approximate closely a predetermined optimal condition.
5. Auxiliary equipment for the amplification of sound should be installed in very large auditoriums.

These are the basic requirements for good hearing in any interior, given in the order in which they should receive attention by the architect or the consultant on acoustics. Upon the principles which determine these requirements rests the science of securing satisfactory acoustics. The designing of every auditorium should be done in close accordance with these requirements. It is therefore necessary either that the architect be thoroughly familiar with the fundamental principles of acoustics or that he engage the services of a competent consultant. In general, if the auditorium be small and simple in shape, the architect can depend upon his own knowledge and follow the general principles and rules set forth in any good treatise on acoustics; if the auditorium be large and complex in its form, it is highly advisable to engage the services of an acoustic consultant. The consultant should be prepared not only to criticize and advise, but also to make tests, either in the laboratory or in the actual auditorium, of new or uncertain acoustic materials, and to investigate the propagation of sound waves in models of auditoriums which have doubtful shapes. When a consultant is necessary, he may be retained by either the architect or the owner, but in either instance he should be associated with the architect from the beginning of the first sketches to the completion of the last details of the furnishing of the auditorium.

Shape and Size. There is no favored ratio of length, width and height for maximal audibility. In plan, the auditorium should be short and wide, so that the audience is brought near the platform or stage. There are splendid auditoriums in which the width exceeds the length by as much as 40 or 50 per cent. The ceiling should be as low as the architectural style or other conditions will allow. Since the loudness of speech or music in an enclosure diminishes as the cubic area of the enclosure increases, high ceilings or other unnecessary extensions of length or width involve a compromise with the best acoustic conditions. All floors, especially toward the rear in large auditoriums, should slope up as steeply as possible. Balconies should not be hung low, nor should they extend far over the main floors. The proscenium opening of a stage should be developed, with respect to position, curvature and surface, so as to promote the penetration of sound to the remote parts of the auditorium. The shape and size of the auditorium are important also with respect to the avoidance of echoes. When direct and reflected sounds reach the ear, coming from the same source but over sound paths which differ in length more than 66 feet, an echo is the result. It is necessary therefore to avoid large differences of paths of direct and reflected sound. If the auditorium be large, all reflecting surfaces which may produce echoes should be well broken up. Deeply beamed or coffered ceilings, open truss and gabled ceilings, pilasters, windows, wall ornament and other architectural features can be utilized to break up undesirable reflecting surfaces. A curved surface may cause troublesome echoes or interference, especially if the center of curvature be near the level of the audience. Such curvatures should be avoided. Where curved ceilings are used, the radius of the curvature should be either large or small compared with height.

Noise. All noise, either of inside or outside origin, should be eliminated as far as possible. Many tests by the writer and others have demonstrated the interfering effect of noise upon the hearing of speech. The practical conclusion from these tests is that even a slight noise, such as may come from a ventilating fan or from walking or talking in an adjacent room, may greatly impair hearing conditions. Inside noises may be reduced by covering the floor with soft materials, and by installing low-speed, quietly-operating ventilating fans and motors. Outside noises are most effectively reduced by building heavy, non-yielding walls and partitions, and by eliminating all cracks

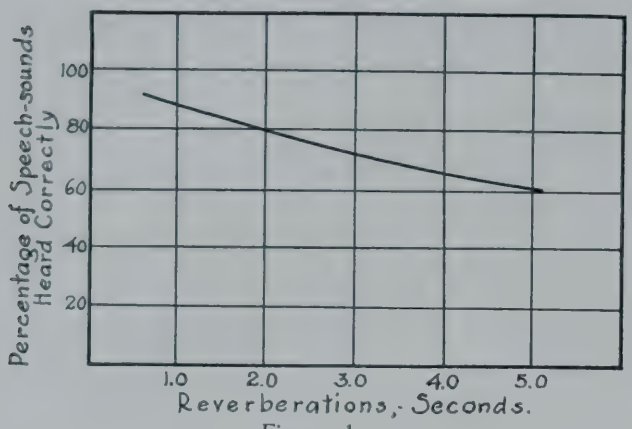


Figure 1

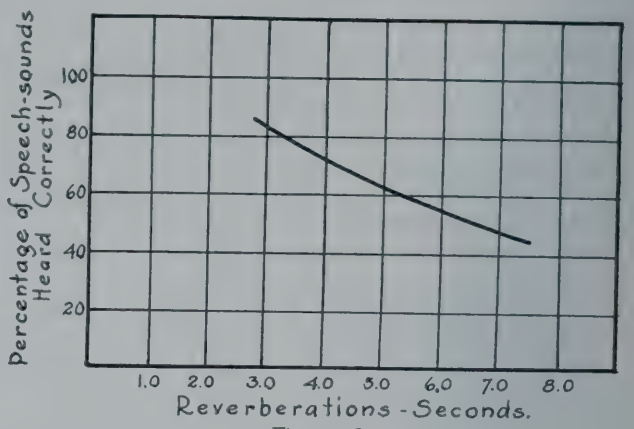


Figure 2

Graphs Showing Relation of Reverberation to Audibility in Actual Speech Tests

around doors and windows. There is a distinction between insulation and absorption which should be understood. Recent tests by Dr. Paul E. Sabine and others indicate that weight, stiffness, and the absence of pores are the effective factors in sound insulation. Reinforced concrete or solid masonry provides satisfactory insulation. Porous, sound-absorptive materials are effective agents in the absorption of noise.

Reverberation. The control of reverberation is, without question, the most important factor in securing good acoustic design. At least 90 per cent of the acoustic defects in auditoriums are attributable to excessive reverberation. In order to determine the effect of reverberation upon the hearing of speech in an auditorium, the writer has conducted some speech tests,—some in a special control room, where the reverberation could be varied by bringing into the room different amounts of hair felt, and some in a series of high school auditoriums which were almost alike as regards shape and size but different as regards reverberation. These tests were similar to the speech articulation tests used by telephone engineers for testing the speech-transmission efficiency of telephone equipment. Meaningless monosyllabic speech sounds are called out, in groups of three, at a rate of one speech sound every .65 seconds, and observers stationed in different parts of the room record what they hear, or think they hear. By comparing their recorded lists with the records of calls, the number and nature of the speech-reception errors can be determined. In this way it is possible to measure the acoustic efficiency of an auditorium for the hearing of speech. The results of these speech tests in the control room and in the group of auditoriums are shown here in Figures 1 and 2. The curves in Figures 1 and 2 show the effect of reducing the reverberation in an auditorium. Thus, in the small control room the percentage of correctly heard speech sounds increased from 61 per cent with a time of reverberation of 5.01[1] seconds, to 92 per cent, with a time reverberation of .60 second. In the group of large auditoriums the hearing conditions, measured in the same way, increased from 43.5 per cent when the reverberation was 7.5 seconds to 84 per cent when the time of the reverberation was only 2.8 seconds.

Reverberation is controlled largely by the nature of the interior materials and furnishings in a room. Thus any large room constructed of hard, impervious materials, as concrete, hard plaster or varnished wood, will be very reverberant, especially when only a few persons are present. Such a room is defective, acoustically, because the separate sounds of speech or music persist so long that they overlap and interfere, resulting in a confusion of the individual sounds. If articulated speech or music is to be heard clearly, each separate syllable or note must be distinct and free from the interfering effect of the preceeding syllables or notes. To meet this requirement there must be a considerable amount of sound-absorbing material in the room, so that each separate sound in speech or music will be absorbed effectively before it interferes with succeeding sounds. Porous plasters, certain wall board materials made of fibrous substances, porous tiles, hair felts, hangings, upholstered seats and heavy carpets are effective agents in reducing reverberation. To secure the best acoustic conditions in a room, the choice of these materials and planning the areas to be treated should be based upon certain acoustic calculations. These calculations are based upon Sabine's reverberation equation and the optimal time of reverberation. Sabine's equation is:

$$t = \frac{k\,V}{A}$$

t=time of reveration, that is the duration of audibility of a sound whose initial intensity is one million times its barely audible intensity.

V=volume of room in cubic feet.

A=total absorption of room, expressed in square feet of a perfectly absorbing surface, as an open window.

k=a constant, depending upon the shape and dimensions of the room. For a simple rectangular room k=.050. For more complicated shapes k varies between .040 and .050.

To illustrate how this equation is used, consider as an extreme case a rectangular room 90 x 100 x 40,

[1] The time of reverberation in any enclosure is the duration of audibility of a standard tone, that is the time that the tone can be heard after its source has been stopped.

built of solid concrete. Solid concrete absorbs only 1.7 per cent of the sound energy which strikes it, the remaining 98.3 per cent being reflected. The volume of this room is 360,000 cubic feet, and the total interior area of concrete is 33,200 square feet. To obtain A, the total absorbing power of the room, the area, 33,200 square feet, must be multiplied by the coefficient of sound absorption, 1.7 per cent or .017; i.e., A=33,200 x .017=564 units of absorption. Therefore, t=.050 x 360,000÷564=31.9 seconds. This indicates that in such a room a loud sound would remain audible fully one-half minute after the source of sound is stopped. Obviously, the room would be very poor acoustically. If the floor of the same room be covered with a heavy carpet, having a coefficient of sound absorption of .30 and the walls and ceiling be plastered with an acoustic plaster, having a coefficient of sound absorption of .20, then A is the sum of the absorption furnished by the carpet and by the acoustic plaster. Hence,

A=9000 x .30+24200 x .20=2700+4840=7540 units.

Therefore t=.050 x 360,000÷7540=2.39 seconds. With this condition of reverberation, the room would have good acoustics, especially with an audience to further reduce the reverberation to about optimal value.

The most favorable time of reverberation for small rooms used for both speaking and music is approximately one second. Large halls and auditoriums require more reverberation, the optimal value being as high as 2.0 to 2.5 seconds in very large auditoriums. The size of the audience will of course affect the time of reverberation, and should be considered in all calculations. It is good practice to provide the optimal time of reverberation for two-thirds of the maximal audience. The acoustics will then be satisfactory with either small or large audiences. The table included here gives the optimal time of reverberation.

Volume, cubic feet	*Optimal time*
Less than 25,000	1.00 seconds
50,000	1.20 "
100,000	1.30 "
200,000	1.50 "
300,000	1.64 "
500,000	1.75 "
1,000,000	1.90 "
2,000,000	2.10 "

Having outlined the method of calculating the reverberation and given the best values of reverberation for different sized auditoriums, it remains to give the coefficients of absorption of some common building and acoustic materials which are in wide use.

Concrete has a coefficient of	.017
Hard wall plaster	.02 to .035
Lime plaster	.03 to .05
Soft wood	.06
Good acoustic plaster	.15 to .25
Carpets	.15 to .40
Patented sound-absorbing materials	.21 to .25
Hair felt	.30 to .70

Auditorium, Washington
Milburn, Heister & Co., Architects

These coefficients[2] are for a tone of 512 double vibrations a second. The coefficients generally are smaller for lower tones and larger for higher tones. The ideal acoustic material is a substance which has the same absorption for all the important frequencies which occur in speech and music. Specifically, such a material should have the same coefficient between 100 and 5000 double vibrations a second.—that is, throughout the useful range of frequencies which occur in speech or music. Such ideal materials are not available, but the architect should be guided by this principle in selecting acoustic materials.

Amplifying Devices. Loud-speaking equipment is not a cure-all for poor acoustics, but in a properly designed auditorium of large dimensions use of a suitable amplifier is advantageous. A loud-speaker will not correct reverberation; it may actually aggravate it. On the other hand, it may be used to increase loudness, and the horns which project the sound may be so placed as to minimize the effects of echoes or interfering reflections. The observations of the writer indicate that auditoriums having volumes smaller than about 500,000 to 1,000,000 cubic feet do not require loud-speaking equipment, provided there are no interfering noises. Wherever such equipment is needed it should be installed under the supervision of a competent engineer. Furthermore, if such amplifying equipment be installed in an auditorium which is to be used primarily for speaking, the reverberation should be reduced somewhat below the optimal value as given in the table.

Treatment of Auditoriums with Defective Acoustics. The principles set forth for good acoustic design apply in the correction of faulty acoustics. The problem usually consists of reducing the reverberation suitably by treating the ceiling or the walls, or both, with absorptive materials. In addition, it is often necessary to locate and eliminate disturbing noises or echoes. The latter may sometimes involve such structural changes in the ceilings or walls as the introduction of a false or a suspended ceiling or the introduction of heavy hangings over certain portions of the walls. It is probably advisable to engage the services of an acoustic consultant in all cases of correcting defective auditoriums. The work should be done under the general supervision of the architect.

[2] For more complete data on the coefficients of absorption for different materials consult references Nos. 1, 3 (a), 7, and 10 (b) listed in the bibliography at the end of this article.

BIBLIOGRAPHY

1. W. C. Sabine, "Collected Papers on Acoustics" (Cambridge University Press).

2. G. Jäger, *Zur Theorie des Nachballs, Sitzungsber der Kaisl. Akad. der Wissenshaften in Wien, Mathnatur. Klasse, Bd.* 120, 1911.

3. F. R. Watson, (a) "Acoustics of Buildings" (John Wiley & Sons), 1923; (b) "Acoustics of Auditoriums," *Journal of Franklin Institute,* July, 1924; (c) "Optimum Conditions for Music in Rooms," *Science,* Aug. 27, 1926, pp. 209, 210.

4. P. E. Sabine, (a) "Architectural Acoustics," *American Architect,* 118, pp. 102-108, 1920; (b) 120, p. 215 and p. 226, 1921; (c) July 4, 1923; (d) June 18, 1924; (e) 130, pp. 119-125, 1926.

5. A. H. Davis, (a) "The Acoustics of Large Halls," *The Architects' Journal,* Apr. 14, 1926, pp. 565-568; (b) "Measurement of Transmission and Reflection of Sound by Partitions," *Phil. Mag.* 3, p. 177, 1927; (c) "Sound Pulse Photography," *Journal Science Institute,* Sept., 1926.

6. E. A. Eckhart, "The Acoustics of Rooms," *Journal of Franklin Institute,* June, 1923.

7. Bureau of Standards, "Architectural Acoustics," Circular No. 300, Feb. 25, 1926.

8. G. W. C. Kaye, "Acoustics of Buildings," *Engineering,* 122, pp. 605, 638, 667, 1926.

9. S. Lifshitz, "Optimum Reverberation," *Phys. Rev.,* pp. 618-621, 1926.

10. V. O. Knudson, (a) "Acoustic Design of Architectural Interiors," *The Architect and Engineer,* Oct., 1924; (b) "Architectural Acoustics," *Los Angeles Builders' Guide,* p. 78, 1926; (c) "Hearing in Auditoriums—Effects of Noise and Reverberation," *The Architect and Engineer,* Sept., 1926 and Jan., 1927.

11. THE ARCHITECTURAL FORUM: "Acoustics of Church Auditoriums," April, 1924; "Reduction of Noise in Banks and Offices," June, 1923; "Acoustical Treatment of Classrooms," August, 1922; "Prevention of Sound Travel in Hospitals," Dec., 1922; "Soundproofing a Building," Nov., 1921.

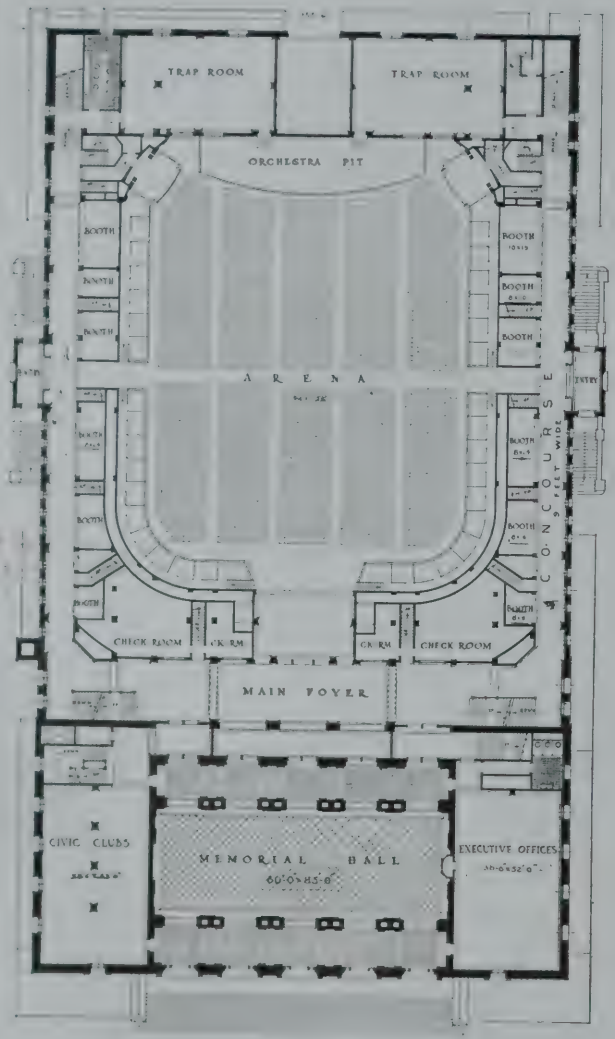
Soldiers' and Sailors' Memorial Auditorium, Chattanooga

R. H. Hunt Company, Architects

Plans on Back

MEMORIAL AUDITORIUM, CHATTANOOGA
R. H. HUNT COMPANY, ARCHITECTS

INTERIOR OF AUDITORIUM



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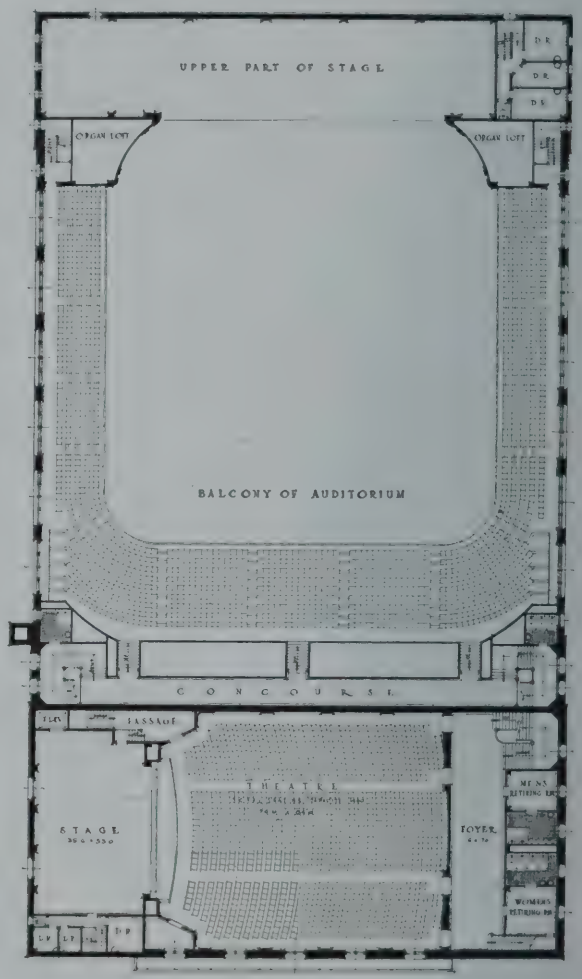


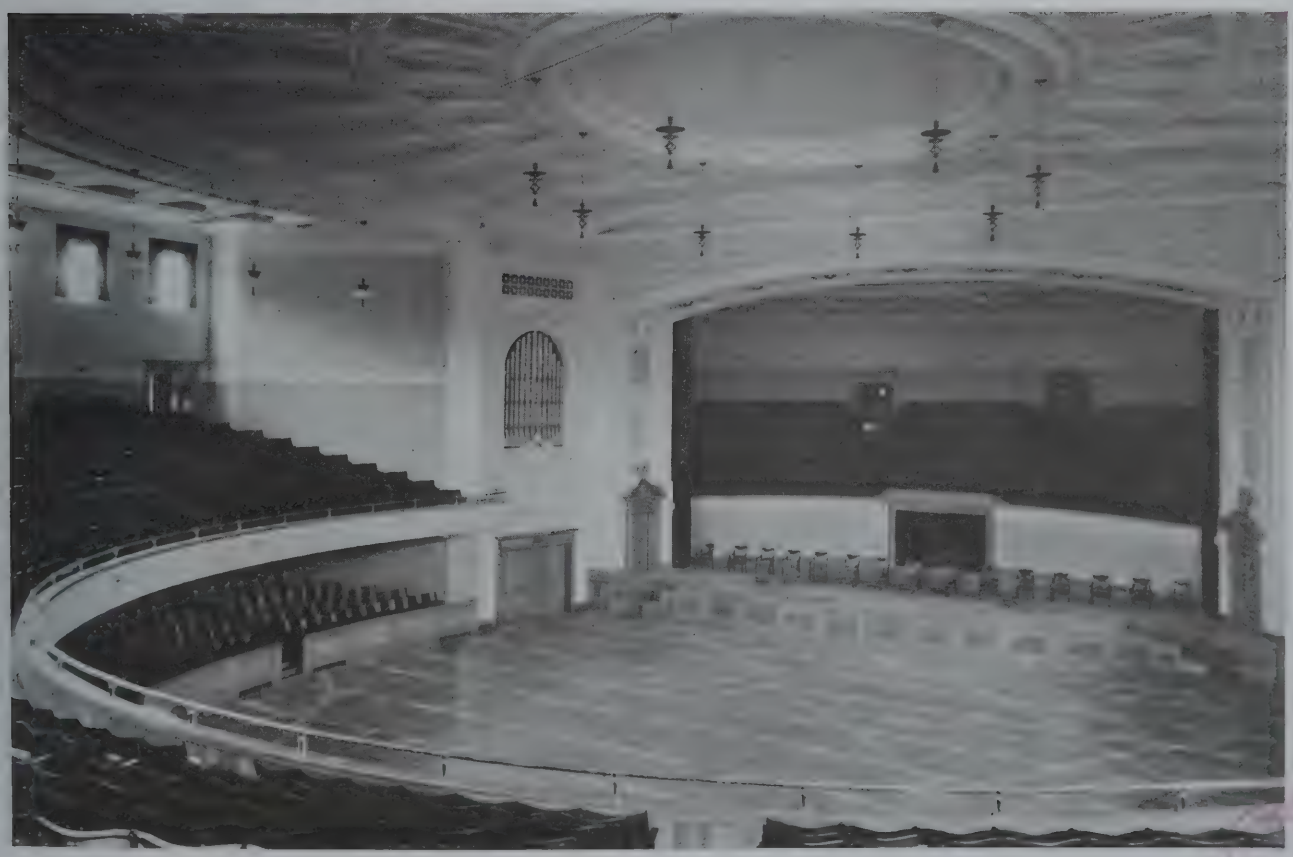
SECOND FLOOR

MEMORIAL AUDITORIUM, CHATTANOOGA

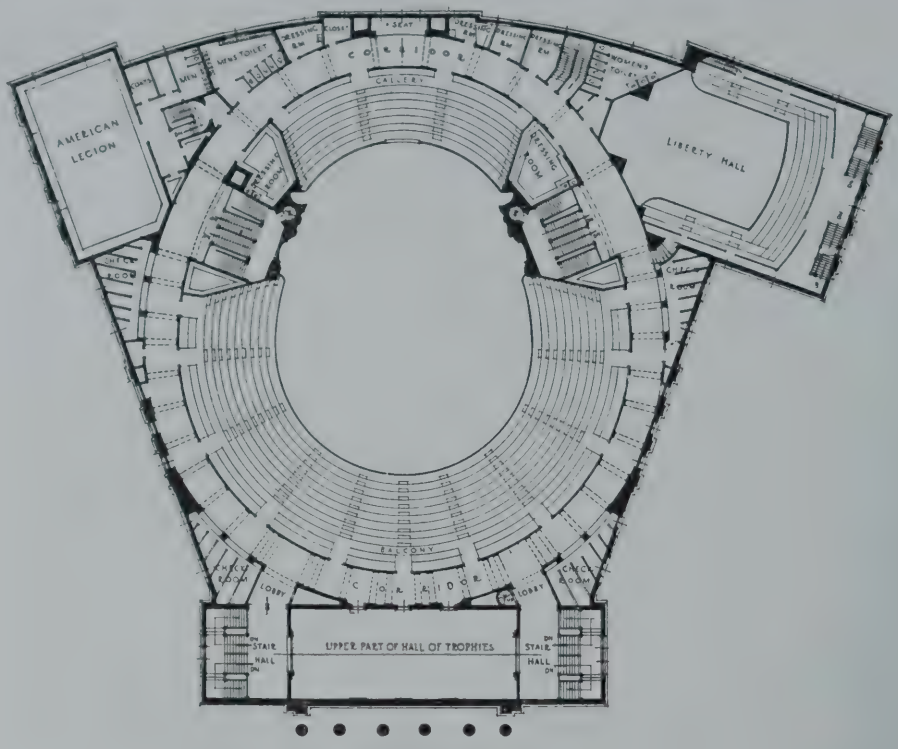
R. H. HUNT COMPANY, ARCHITECTS

Photos. Paul J. Weber *Plates Inc. Back*

MEMORIAL AUDITORIUM, LOWELL, MASS.
BLACKALL, CLAPP & WHITTEMORE, ARCHITECTS



INTERIOR OF AUDITORIUM



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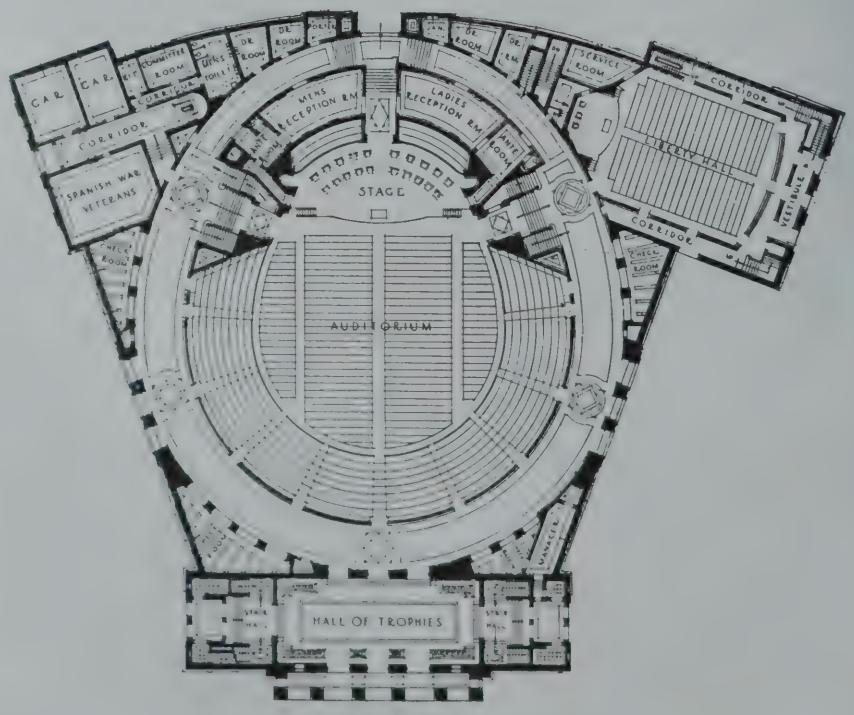

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PLANS, MEMORIAL AUDITORIUM, LOWELL, MASS.

BLACKALL, CLAPP & WHITTEMORE, ARCHITECTS

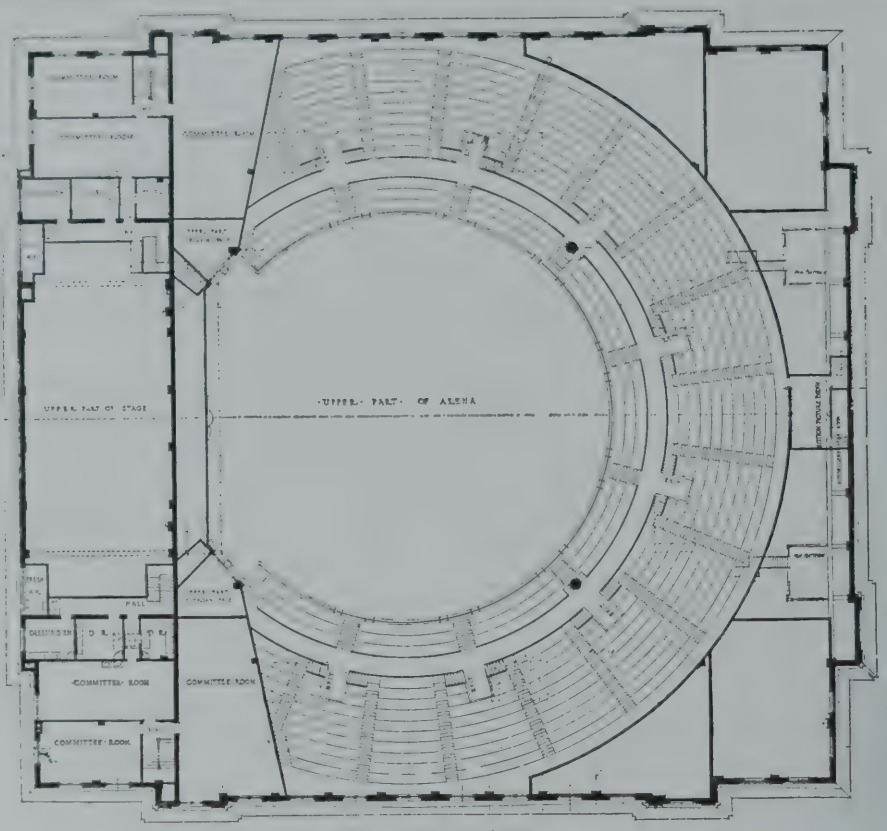
Plans on Back

MEMORIAL AUDITORIUM, STOCKTON, CALIF.

GLENN ALLEN AND WRIGHT & SATTERLEE, ASSOCIATED, ARCHITECTS

INTERIOR OF AUDITORIUM

LIBRARY



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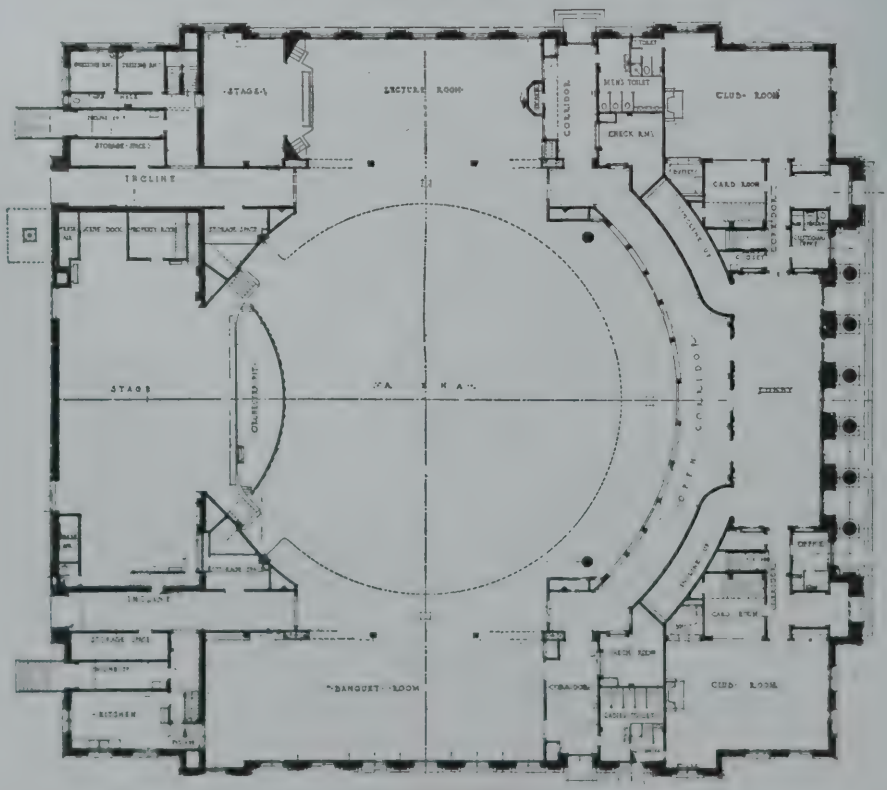


MAIN FLOOR

PLANS, MEMORIAL AUDITORIUM, STOCKTON, CALIF.

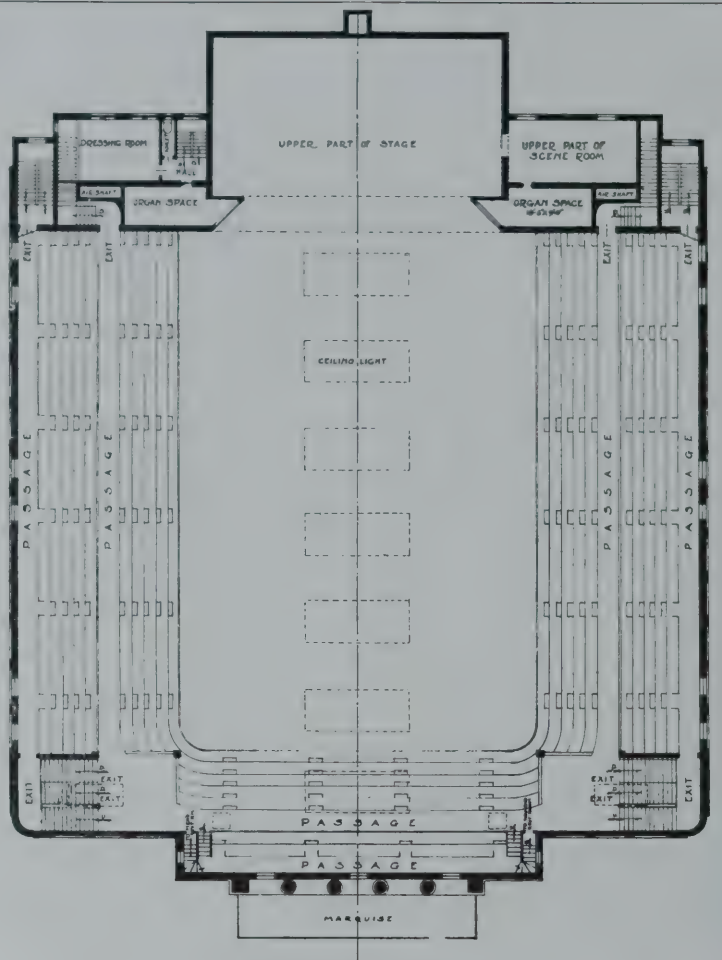
GLENN ALLEN AND WRIGHT & SATTERLEE, ASSOCIATED, ARCHITECTS

Photos. Theo. M. Fisher *Plans on Back*

MUNICIPAL AUDITORIUM, COLORADO SPRINGS

CHARLES E. THOMAS AND MAC LAREN & HETHERINGTON, ASSOCIATED, ARCHITECTS

INTERIOR OF AUDITORIUM



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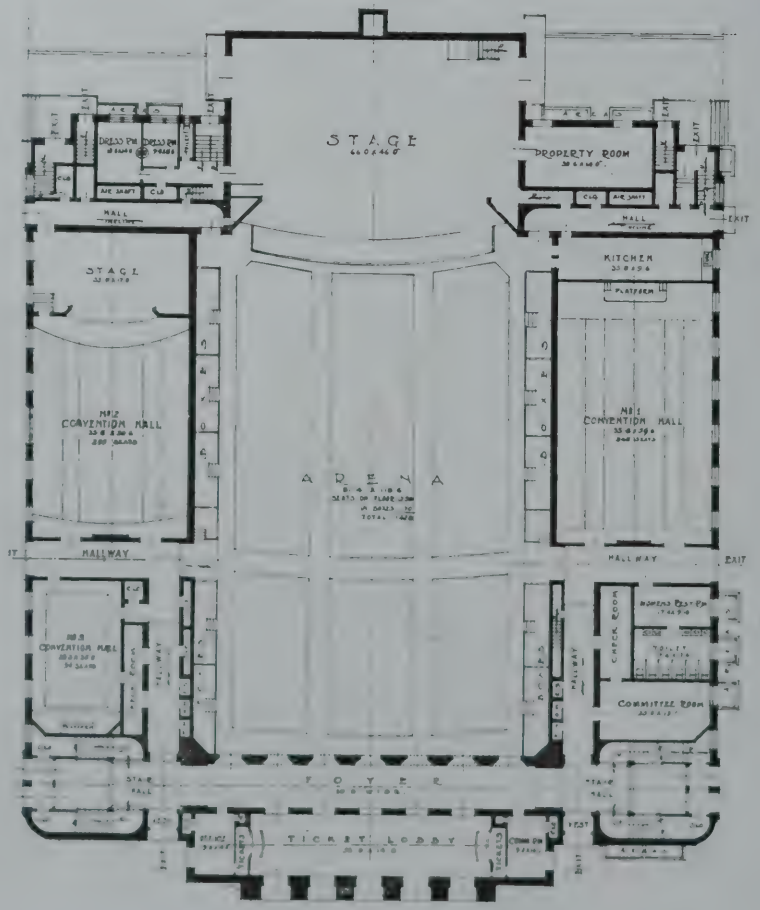

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PLANS, MUNICIPAL AUDITORIUM, COLORADO SPRINGS

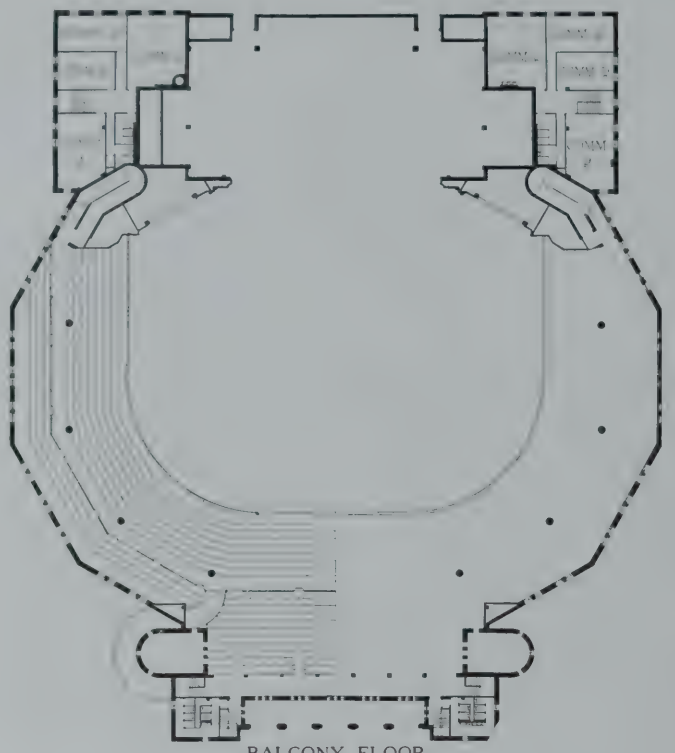
CHARLES E. THOMAS AND MAC LAREN & HETHERINGTON, ASSOCIATED, ARCHITECTS

Photos. Harvey Patteson *Plans on Back*

MUNICIPAL AUDITORIUM, SAN ANTONIO

ATLEE B. & ROBERT M. AYRES, GEORGE WILLIS, AND EMMETT T. JACKSON, ARCHITECTS

INTERIOR OF AUDITORIUM



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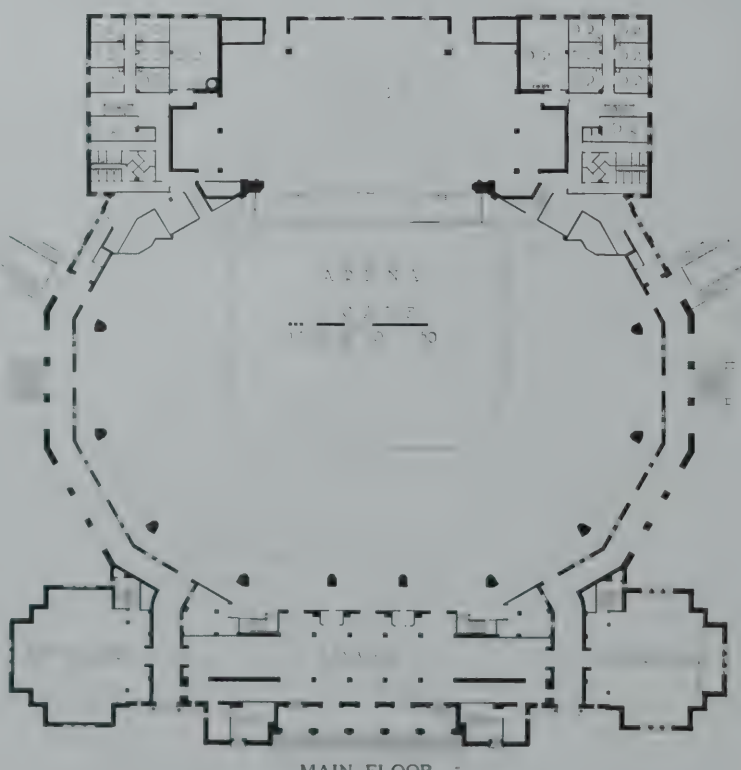

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PLANS, MUNICIPAL AUDITORIUM, SAN ANTONIO

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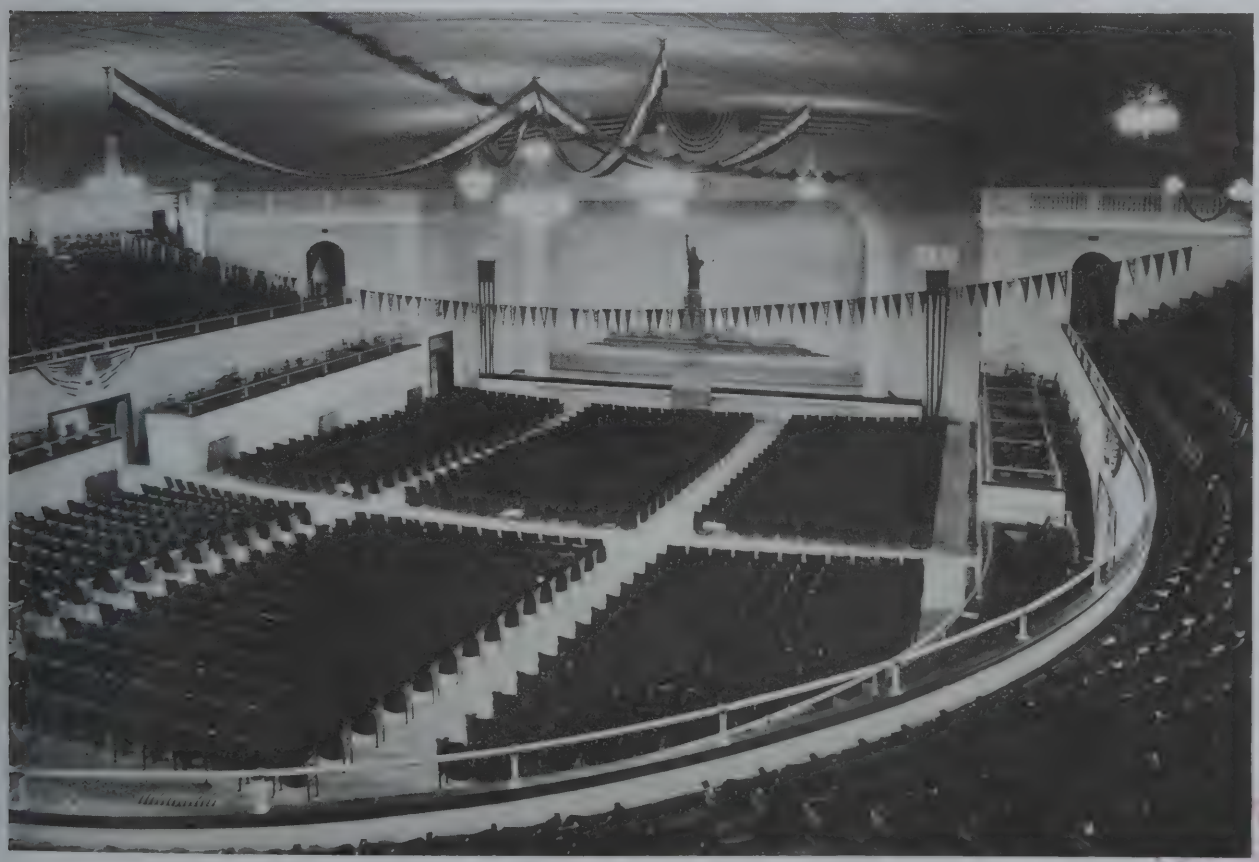
AUDITORIUM, AMARILLO, TEX.

SMITH & TOWNES, ARCHITECTS; LANG & WITCHELL, ASSOCIATED



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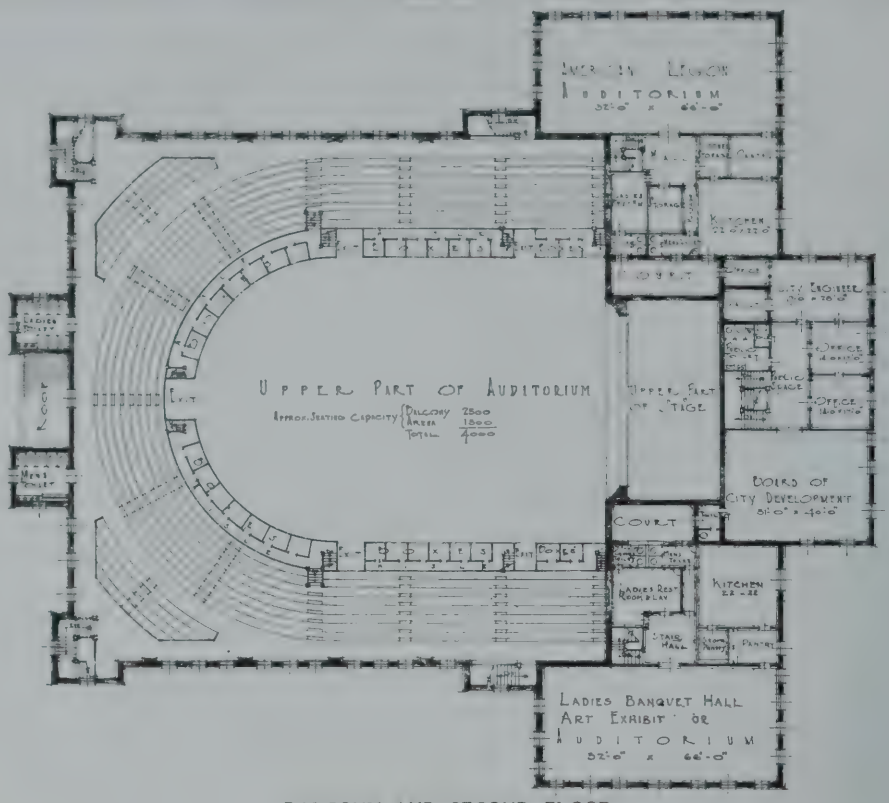

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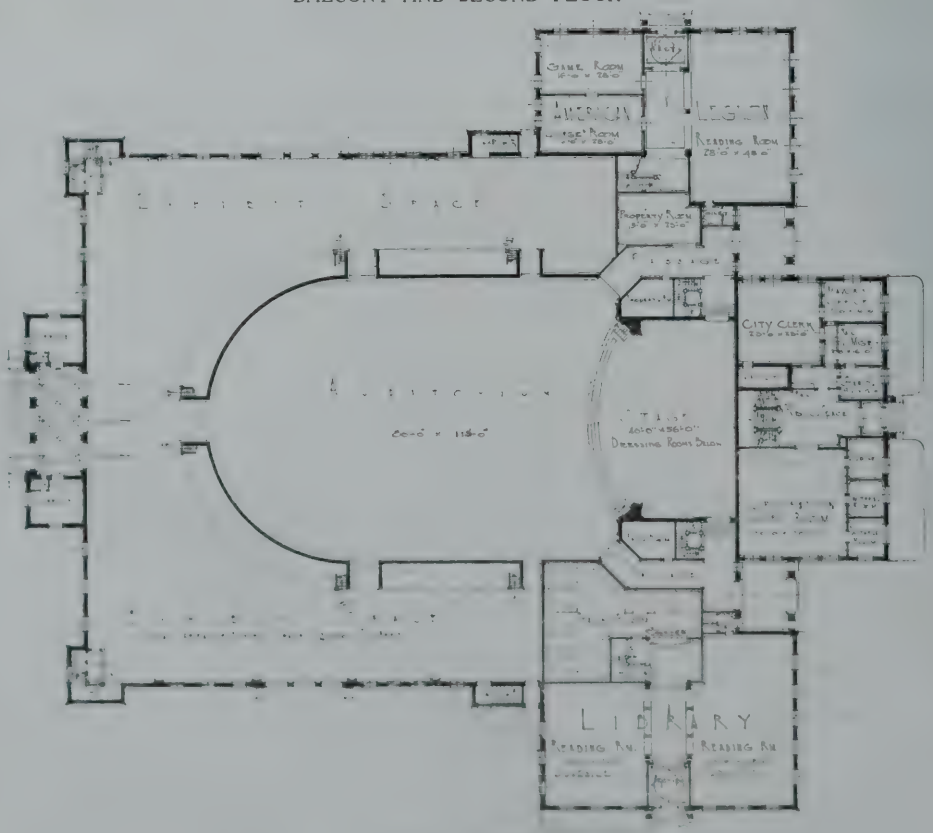

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PLANS, AUDITORIUM, AMARILLO, TEX.

SMITH & TOWNES, ARCHITECTS; LANG & WITCHELL, ASSOCIATED

MAIN ENTRANCE

PROSCENIUM

MEMORIAL AUDITORIUM, SACRAMENTO

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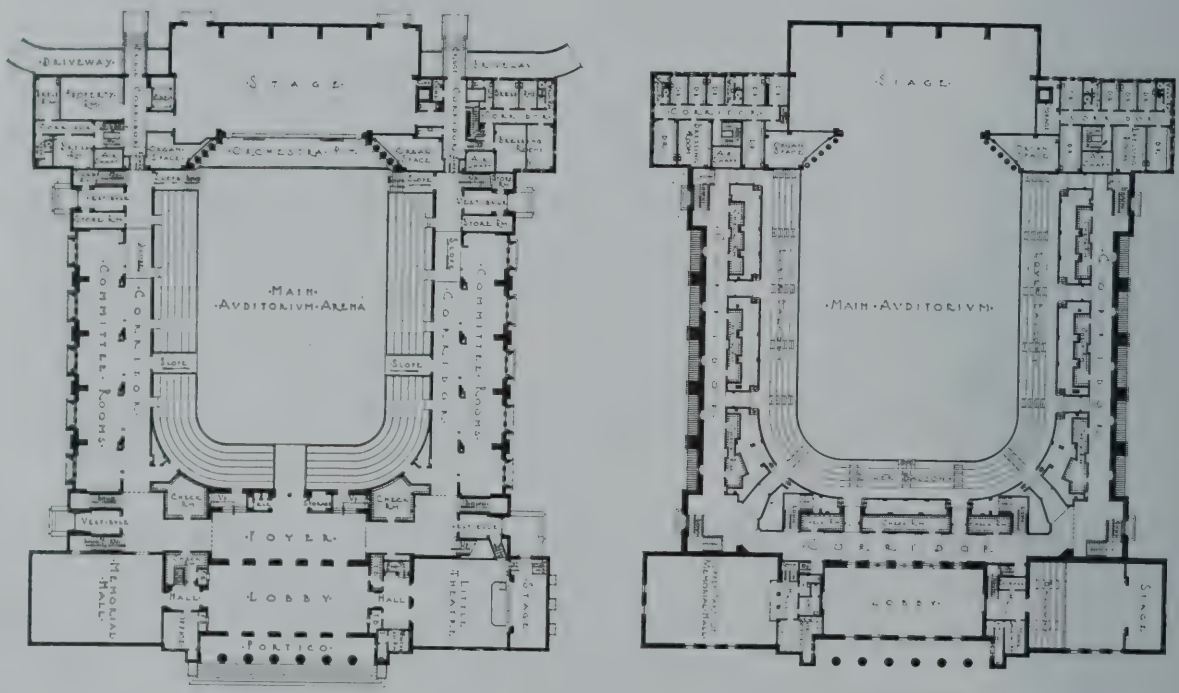
Plans on Rack



MAIN FLOOR

MEZZANINE

PLANS, MEMORIAL AUDITORIUM, SACRAMENTO

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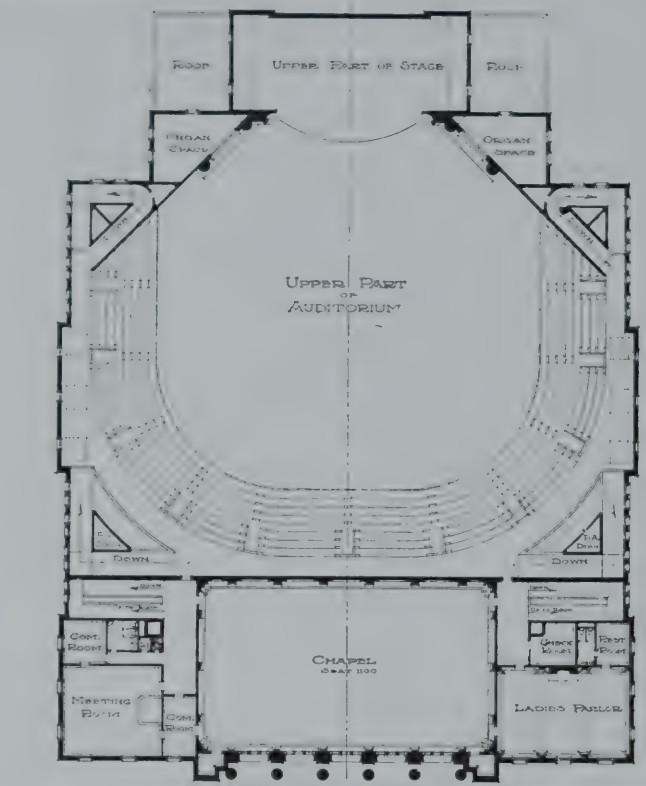
MEMORIAL AUDITORIUM, KANSAS CITY, KAS.
ROSE & PETERSON, ARCHITECTS



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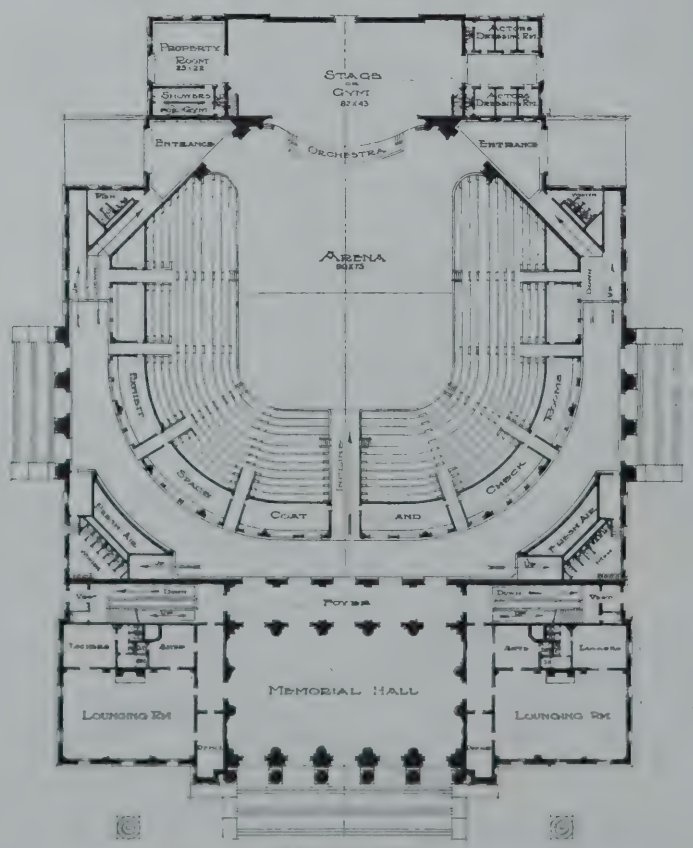

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The Building Program of the Government

By OSCAR WENDEROTH

THE Public Building Act is in many respects a very remarkable piece of federal legislation. It inaugurates in an impressive manner a public building program that will undoubtedly require years for its execution. It also establishes an entirely new legislative policy in connection with the distribution, authorization, designing and construction of the classes of federal buildings customarily placed under the control of the Treasury Department. Among its other important provisions, the new act paves the way for participation by the private architect in the execution of that part of the whole federal building program that Congress entrusts to the office of the Secretary of the Treasury.

It may be interesting to note what are included in "the classes of federal buildings customarily placed under the control of the Treasury Department." These are court houses, post offices, immigration stations, custom houses, marine hospitals, quarantine stations, and other public buildings of the classes under the control of the Treasury Department. The "control" which the Treasury Department exercises over these projects includes the acquisition of sites, the designing and the preparation of specifications, the supervision of construction, the making of contracts and payments, and the furnishing, equipping, maintenance, operation and repair of the structures.

Certain joint reports submitted to Congress by the Secretary of the Treasury and the Postmaster General indicate that an expenditure of several hundred million dollars will be necessary to place the accommodations provided by buildings under the control of the Treasury Department on a par with the needs. The new Public Building Act carries authorizations totaling about one hundred and thirty-two million dollars for expenditures outside of the District of Columbia. It sets in motion a construction program for the completion of which very considerable additional expenditures must be authorized in subsequent acts.

At the close of the last session of Congress there was pending a bill which would have appropriated the funds necessary for the commencement of the construction work outside of the District of Columbia that is newly authorized in the Public Building Act. This bill also authorized an increase of one hundred million dollars in the aggregate expenditure on this part of the program. The bill failed of passage, but not because of any opposition to its provisions. It

Photo, Drix Duryea

Post Office, New York

McKim, Mead & White, Architects

was caught in the legislative jam which resulted from a "filibuster" in the Senate. In company with other legislation that failed of enactment for the same reason, it must await reconsideration during the session of Congress which begins in December of this year. Favorable action on this bill, when it is reintroduced, seems to be assured. Prior to the time of the filibuster in the Senate, Congress made appropriations which permitted the Treasury Department to proceed with the construction of the previously authorized but "deferred" projects. There were 79 such projects.

The agency through which the Secretary of the Treasury administers the portion of the federal building program that is under the control of the Treasury Department is the office of the Supervising Architect. This office has been a part of the Treasury Department for fully three-quarters of a century. The public building legislation, enacted and contemplated, makes of the work of the office of the Supervising Architect one of the major activities of the federal government. But notwithstanding the long period during which the office of the Supervising Architect has been identified with public building work, neither its function nor its relation to the Treasury Department seems to be generally understood or appreciated. The Post Office Department contracts for the lease of buildings which are erected in accordance with its requirements and under its supervision by private initiative. The Treasury Department has nothing to do with the designing and construction of these buildings but all buildings erected with the public funds and used wholly or in part for the conduct of the postal business are constructed from designs prepared by or under the direction of the Supervising Architect of the Treasury Department.

The new act requires that the plans for all of the construction work shall be prepared in the office of the Supervising Architect of the Treasury Department. The act, however, gives the Secretary of the Treasury authority to employ architects and other experts in a consulting capacity to assist in the study of what is often an exceedingly complex problem. In accordance with this authority, the Secretary has called in an advisory board of architects to coöperate with the Supervising Architect in the consideration of the arrangement and disposition of the department buildings it is proposed to erect in Washington.

Before work may be commenced on any project provided for in the new Public Building Act, the Secretary of the Treasury is required to submit to Congress an estimate of the cost of the individual project. The approval of this estimated expenditure by Congress, and its citation in an appropriating act which provides funds for the commencement of work, establish the limit of cost for the project. The Deficiency Appropriation Act, approved July 3, 1926, contains several such items for the District of Columbia. They indicate the magnitude of the

Post Office, Ithaca, N. Y.

building projects in the capital for which the office of the Supervising Architect is engaged in preparing the plans. The items are: (1) The Administration Building of the Department of Agriculture. Messrs. Rankin & Kellog have been employed by the Secretary of the Treasury to prepare, in coöperation with the office of the Supervising Architects, sketches and designs for the completion of the building. The limit of cost has been fixed at two million dollars. (2) Agricultural Department; at a limit of cost of five million, seven hundred and fifty thousand dollars. (3) The National Archives Building; at a limit of cost of six million, nine hundred thousand dollars. (4) The Department of Commerce Building; at a limit of cost of ten million dollars. In accordance with specific authority contained in the new Public Building Act, the Secretary of the Treasury has employed Messrs. York & Sawyer to prepare studies and sketches for this great building, in coöperation with the office of the Supervising Architect. (5) The Treasury Department. A building for the accommodation of the Bureau of Internal Revenue, at a limit of cost of seven million, nine hundred and fifty thousand dollars. (6) The Treasury Department. Additions to the so-called "Liberty Loan" building adjacent to the building of the Bureau of Engraving and Printing; two additional stories, at a limit of cost of three hundred and seventy-five thousand dollars.

One of the activities of the office of the Supervising Architect of which very little is generally known is concerned with completed buildings. For these buildings the Supervising Architect supplies the furniture, rugs, carpets, and lighting fixtures, and the post office working room equipment, as well as all vaults, safes, and post office lock boxes. The Supervising Architect operates, maintains, and repairs these structures. This includes the employment and direction of the boiler and engine room, janitor, and char forces that are required in the care of the buildings and their grounds, and in the furnishing of heat, light and power. This force now numbers about 6000 persons, distributed among approximately 1600 buildings in all parts of the United States. The office of the Supervising Architect deals extensively in real estate, doing both a conveyancing and a rental business. The office renders a great many other services to the federal government for which there is no counterpart in the service which the private architect gives the private client. It will be seen from this that if the office of the Supervising Architect is required to expend twenty-five million dollars a year on the acquisition of sites and on building construction, its total annual expenditures must be much more.

At the present time (August, 1927) the technical staff in the office of the Supervising Architect in Washington numbers 188 employes; the administrative and clerical staff numbers 165, a total of 353 employes. The present field staff, charged with the

Post Office, Kokomo, Ind.

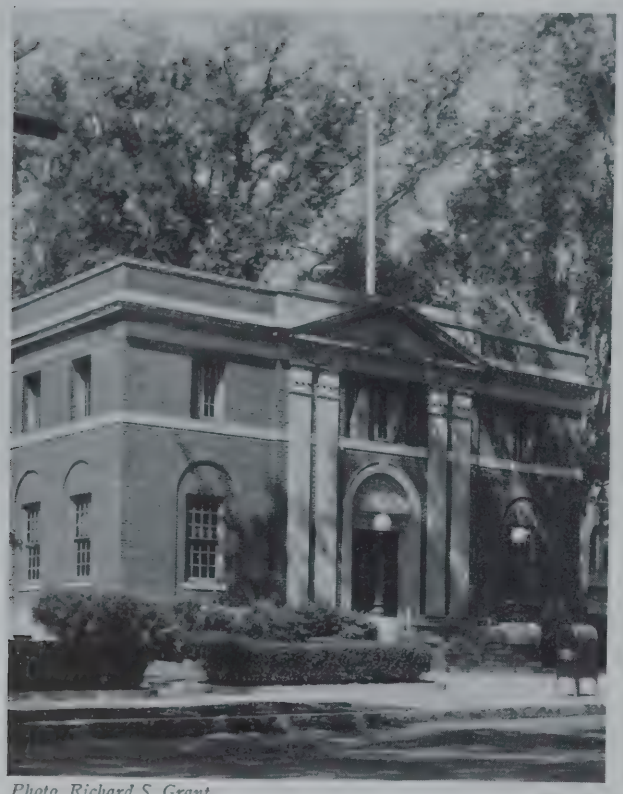


Photo. Richard S. Grant

Post Office, Greenfield, Mass.

supervision of construction and of the upkeep of plants and structures, numbers 60 employes. The technical staff includes architectural designers and draftsmen, architectural engineers (estimators and specification writers), structural engineers and mechanical engineers. The administrative and clerical staff in the office of the Supervising Architect seems very large in proportion to the technical staff. This is not because there is a large number of administrative employes. It results from numerous activities of the office that are apart from its purely architectural functions. The acquisition of sites, the care of purchased property, the preparation of a nation-wide survey of the needs of the public service, the many estimates and reports for which the office is called upon, the work of furnishing, equipping, operating and maintaining completed buildings, the conducting of a very large correspondence, and the administration from Washington of a diversified activity that spreads out over a territory of more than three million square miles, all help to account for what seems to be a disproportionately large clerical staff. The relation between the technical staff on one side and the administrative and clerical on the other illustrates strikingly the difference between the character of the service rendered by the office of the Supervising Architect to the government and that rendered to the private client by the private architect.

The office of the Supervising Architect is not yet acquiring sites and constructing buildings at the rate of twenty-five million dollars a year, exclusive of its other activities. The increase in the technical staff which may become necessary in order to comply with the requirements of Congress respecting the execution of the public building program may present quite a problem. The office of the Supervising Architect may become an active competitor with the private architect for the services of designers, draftsmen, engineers, specification writers, superintendents, and other technically qualified employes needed in his office.

It seems right that the various activities of the federal government should be housed in public buildings that are properly designed and constructed. This must be accomplished through the agencies that Congress has provided for the purpose. The public building legislation offers the private architect an opportunity of coöperating in the carrying out of the great public building program. The extent of this coöperation, and the manner in which the service may best be rendered, may become more apparent when the new building program is actually in process of execution. In the meantime, there are undoubtedly ways in which the architectural profession can coöperate with the Treasury Department in its task of placing the office of the Supervising Architect on a footing to meet satisfactorily the heavy demands which Congress will probably make upon it during future years.

What has been said up to this point may seem to have very little to do with the designing and construction of the post office buildings which are shown in these illustrations, but it all has a bearing on the subject. All the factors affecting the administration of public building work must be taken into consideration. If this is not done it is difficult to understand the differences between the methods in vogue in the direction of public work and the procedure customary in private practice. The private architect may control, at least to some extent, the conditions under which he can do his best work. In any event, he is free to decline a commission if the conditions attached to it do not meet his approval. Not so the Supervising Architect. His work, and the conditions under which it is to be executed, are determined for him by legislation and by departmental procedure.

Of all of the classes of public buildings erected throughout the United States by and under the control of the Treasury Department, those that are required for the accommodation of the postal business are in the great majority. The plans for these post office buildings are prepared by or under the immediate direction of the office of the Supervising Architect, which also superintends their construction. As this office has been identified for so many years with the designing and construction of post office buildings, both large and small, one might very naturally assume that by this time the process had been reduced to a system, and that the requirements underlying the planning of all the different types of post office buildings could be expressed as a sort of formula. While this is one of the achievements that, within reason, is made possible by the new Public Building Act, it is not as yet an actual accomplishment,—at least not to any considerable extent. It re-

quired the coöperation of Congress in the form of amended legislation to enable the office of the Supervising Architect to apply to the planning of post office buildings in a systematic manner the experience of many years in this particular class of work. The Public Building Act, approved May 25, 1926, fully clears the way for the application of these methods.

Prior to 1902 public buildings were authorized by Congress, singly or perhaps in small groups of not more than a half-dozen. The determination of the localities in which new buildings should be erected was a jealously guarded prerogative of Congress. Authorizations were not based upon any general survey of the needs of the public service throughout the country. The Treasury Department might submit estimates and reports to Congress respecting contemplated public buildings or the needs of the public service, but the choice of the favored communities in which new buildings were to be provided and the sums to be expended upon the buildings, continued to be wholly functions of Congress. In those days the Treasury Department operated somewhat independently of the Post Office Department in carrying out public building authorizations. The Treasury Department collected the data respecting the needs of the postal service in a community in which the construction of a building was authorized. This information was obtained from the local postmaster. It represented his personal opinion, which would not necessarily have been the recommendation of the Post Office Department. But on the basis of the data thus collected the office of the Supervising Architect prepared the plans for the building. Each authorization was looked upon as an independent proposition, and the office of the Supervising Architect approached the designing from that point of view.

With the passage of the first of the so-called "omnibus" public building bills, Congress inaugurated the custom of grouping a considerable number of building projects together in a single authorizing measure. At this time Congress also began the practice of authorizing the construction of public buildings in smaller communities. The new elements introduced into the public building situation by the "omnibus" public building bills brought about changes in methods in vogue in the office of the Supervising Architect. The necessity for a more systematic procedure impelled the Treasury Department to take the initiative in securing closer coöperation with the Post Office Department in the determination of post office requirements. Out of this there developed the designation of a joint Treasury Department—Post Office Department committee on post office planning. The Treasury Department then commenced to erect buildings for the Post Office Department instead of for postmasters. The Post Office Department collected data respecting the needs of the postal service in the various communities in which the construction of post office buildings was authorized. The Post Office Department's representative on the committee submitted in each instance the Department's recommendations

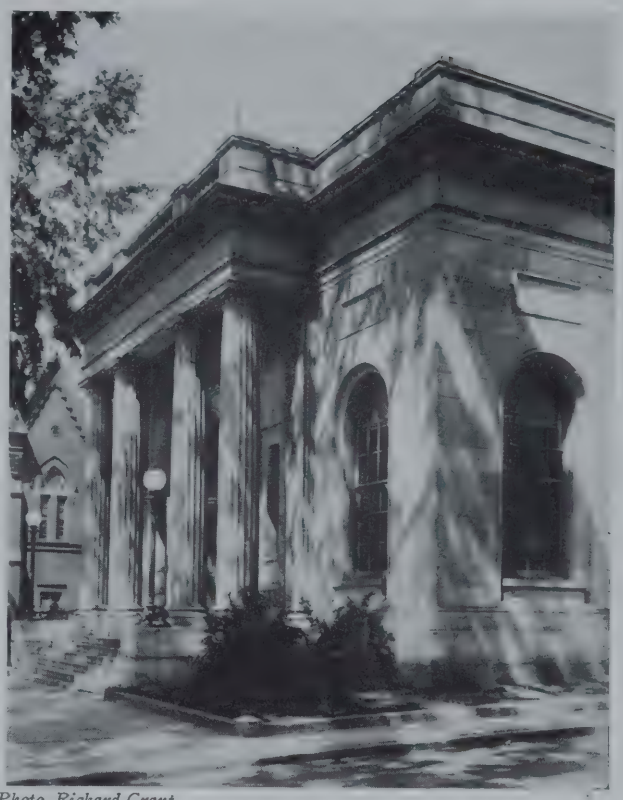


Photo. Richard Grant

Post Office, Johnstown, N. Y.

regarding the desired accommodations for the service.

The joint committee analyzed the data it collected respecting the needs of the branches of the public service entitled to accommodations in buildings erected by the Treasury Department. It made every effort possible to assist the office of the Supervising Architect in formulating systematic methods of planning for the needs of the postal service. Many improvements in planning and arrangement grew out of the work of the committee. It brought about much closer coöperation between the two departments. However, the efforts of the committee toward a more systematic procedure and the standardization of methods were hampered by the Congressional procedure still in vogue for the determination of the localities in which buildings should be erected and the fixing of the limits of cost; Congress continued to exercise these prerogatives. An "omnibus" public building bill would provide a construction program for the Treasury Department that would require several years for its execution. Such an act was purely an authorizing measure. It designated the places in which buildings should be erected and fixed the limits of expenditure, but it appropriated no actual funds for carrying on the work. Such appropriations were made in the annual appropriation measures passed at each succeeding session of Congress. A rule required the office of the Supervising Architect to place public buildings under contract in the order in which the government acquired sites.

This course seemed to be the only way out of an embarrassing situation, but it was not a very satis-

Main Corridor, Post Office, Denver

factory solution. Buildings were placed under contract without regard to the relative urgency of the need for them. The Post Office Department would have preferred that the order in which such buildings were constructed should be determined by a study of the needs of the postal service. Under these conditions, the joint departmental committee could make but a limited application of its accumulated data respecting the facilities for the conducting of the postal business throughout the country. When one of the authorized projects was reached in turn, the committee met to consider the data which had been collected relative to the particular undertaking, and the recommendation of the Post Office Department. The allotment of space was discussed, and a general arrangement was agreed upon. The decision was based not only on the existing needs, but took into consideration a reasonable growth in the public business during the ensuing decade. The Treasury Department contributed its recommendation respecting any accommodations which should be provided for any branches of the public service other than the postal service entitled to quarters in the new building. The task of the office of the Supervising Architect was then to determine whether an adequate building appropriate to the locality could be built for not to exceed a limit of cost that may have been fixed several years previously by a Congressional committee which based its action upon purely tentative information. In

Corridor, Post Office, Denver

many instances the office of the Supervising Architect found it impossible to reconcile the various factors.

When a private client is advised by his architect that the program he has laid down cannot be executed within the expenditure he has in mind, he has the choice of revising his program or of increasing his expenditure. Neither of these courses was open to the Supervising Architect. Requesting Congress to increase a limit of cost for a building was an expedient which was adopted only in the most acute situations. It not only involved delay but, more than that, it opened the door to fresh embarrassment for the Secretary of the Treasury. In the designing and construction of the building, advantage could be taken of every expedient that would tend to hold down the cost. If, however, the authorized limit of cost would require the construction of a building that would be outgrown even before it was completed, there was no choice but to lay the project aside, report the facts to Congress, and await the time when, through Congressional action, the limit of cost was extended sufficiently to permit the work to go ahead.

It is not true, of course, that all of the authorizations contained in an "omnibus" public building act were inadequate. The tendency of the system, however, was to bring about the construction of buildings which fell measurably below the standards of planning, arrangement, design and construction which should always be maintained for public buildings.

Lobby, Federal Circuit Court, Denver

Photos, Charles S. Price

Entrance Corridor, Post Office and Federal Court House, Denver

The policy of Congress seems to be to authorize lump-sum limits of cost for various section of that portion of the entire federal building program that is placed under the control of the Treasury Department. Thus the present act sets aside fifty million dollars for expenditures in the District of Columbia; one hundred million dollars outside the District; fifteen million dollars for a group of deferred projects; and a general authority for the purchase of new sites in certain localities from the proceeds of the sale of existing buildings and the land. The Secretary of the Treasury is required to submit to Congress his recommendations respecting the manner in which each lump-sum authorization should be allocated. The limit of cost of a project ceases to be fixed arbitrarily years in advance of the time when work on it may be commenced; it is now determined by the latest data available to the office of the Supervising Architect.

The office of the Supervising Architect, especially during the last 25 or 30 years, has produced, either from its own designs or in coöperation with private architects, many well planned and architecturally admirable public buildings. It would be quite possible to select from among these structures a number which would illustrate the successful application of recognized principles of planning and designing in the solution of the problems presented by public building work. Among these buildings, however, there are many that are frankly compromises. They are the best that could be had under the circumstances, but the Treasury Department would be unwilling to have them accepted as representative of the standards of design and construction which the office of the Supervising Architect strives to maintain.

Under the liberal provisions of the new Public Building Act the office of the Supervising Architect will be given the opportunity, in coöperation with the Post Office Department, of applying systematic methods to the designing of post office buildings and of giving this work the full benefit of the special study which both departments have devoted to the subject. This does not mean, however, that from now on post office buildings are to be produced after the manner of stereotypes. The post office buildings that are designed in the office of the Supervising Architect are distributed over a territory of more than three million square miles. In this vast area the office encounters a great variety of local conditions, all of which affect the work of the designer. Stereotyped plans and designs could not be applied to the varying conditions encountered in the numerous localities in which public buildings must be erected. The office of the Supervising Architect has developed a number of typical plan schemes for post office buildings which, within limits, may be adapted to changing conditions. This applies generally to the smaller buildings. The larger projects involve conditions which make each building a special problem.

Photo, Paul J. Weber

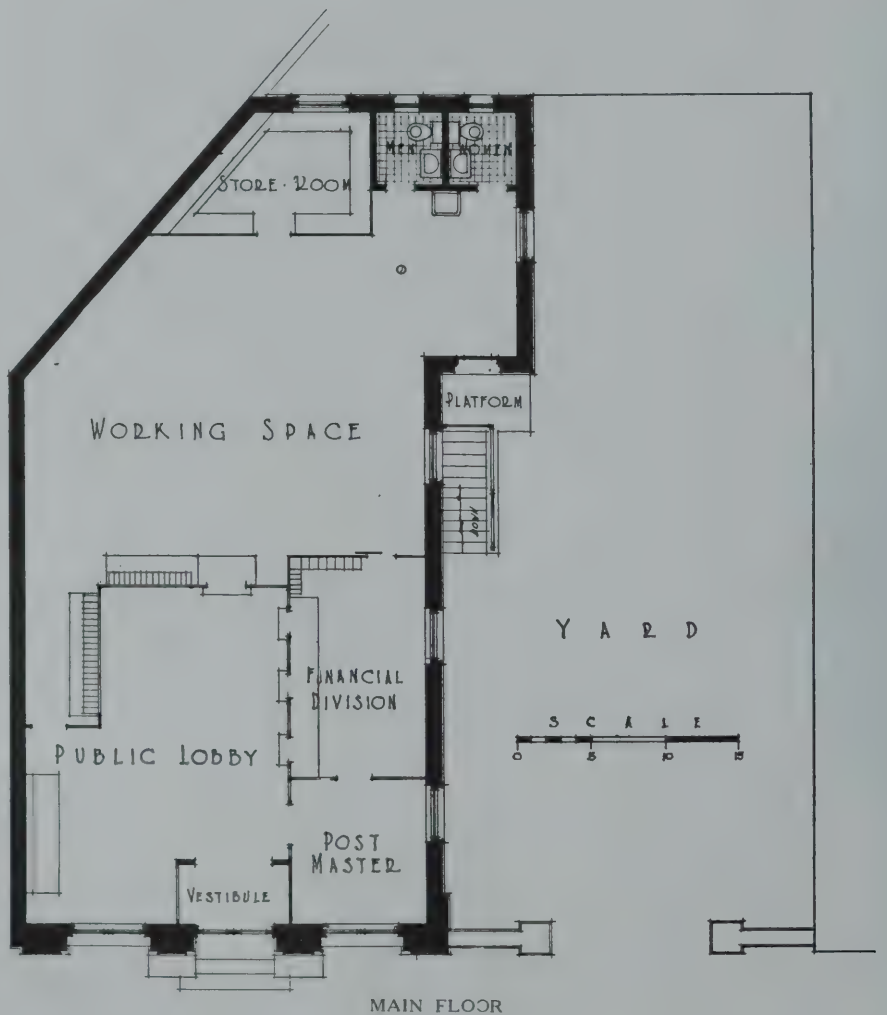
Post Office, Cambridge, Mass.

Photo. George H. Van Anda

Plan on Page

POST OFFICE, LARCHMONT, N. Y.

FRANK A. MOORE, ARCHITECT



MAIN FLOOR

PLAN, POST OFFICE, LARCHMONT, N. Y.

FRANK A. MOORE, ARCHITECT

POST OFFICE, BRONXVILLE, N. Y.
PENROSE V. STOUT, ARCHITECT

Photo, George H. Van Anda

POST OFFICE, AMHERST, MASS.

Photo, Paul J. Weber

POST OFFICE, BLOOMINGTON, IND.

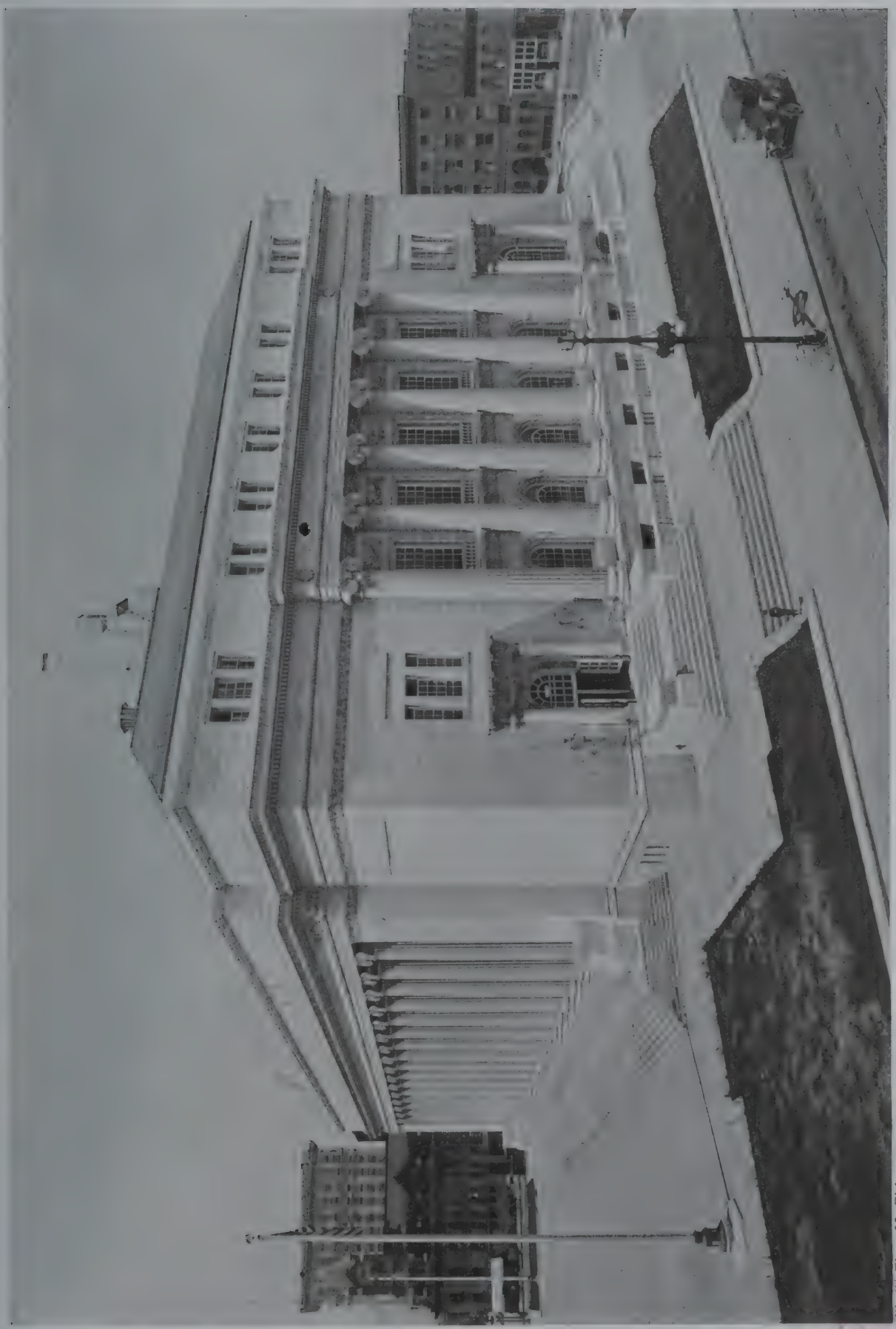
Photo. Charles Gilbert Shaw

POST OFFICE, CADILLAC, MICH.

Photo, Clark Studio

POST OFFICE, MOBILE

Photo, Ebbs & Knell, Inc.



POST OFFICE AND COURT HOUSE, DENVER

Photo: Theo. M. Fisher

POST OFFICE AND COURT HOUSE, CHARLOTTE, N. C.

Planning Community Buildings

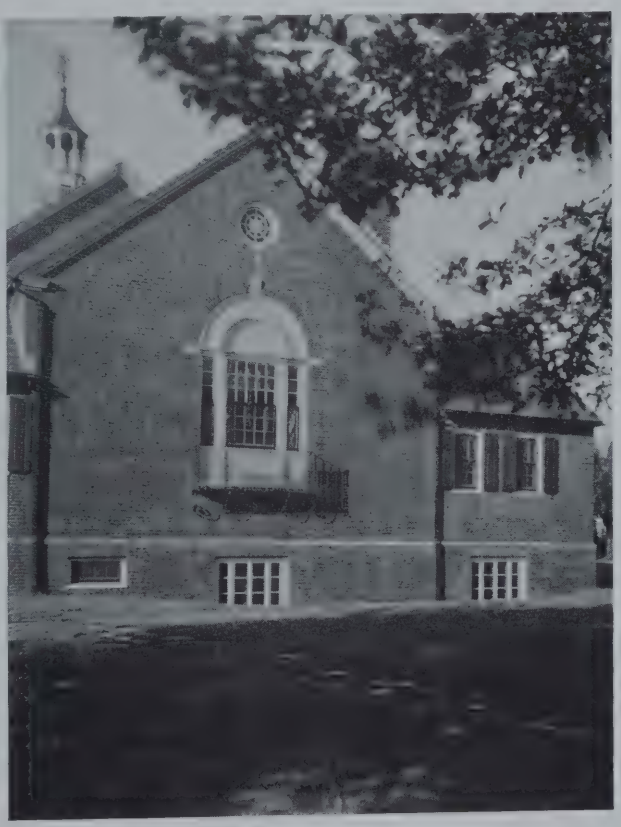
By RALPH C. HENRY

AS an eminently successful instrumentality for focusing the social life of our smaller cities, our suburban towns, our rural communities and, for that matter, wherever people sense the value of getting together for the comparison of ideas, with its consequent stimulation to collective effort, the "community house" has already found its place in the scheme of things. The idea is not new. It does not have to be "sold." It is the shelter of by far the most democratic of social organizations, and its conclusions, by consequence, form the most accurate index of average neighborhood opinion. Its influence and power for good are directly proportionate to its adaptability to varied enterprises, to its external environment, and to the adequacy of its housing arrangements.

Elasticity of plan arrangement, therefore, becomes at once an obvious desideratum if the largest numbers, both young and old, are to be attracted to participate in the varied activities that come well within the scope of such a structure. Promoters of such enterprises should be chosen from among the most aggressive and successful of local business and professional men, devoid of neither optimism nor courage. Leaders should be chosen only from among men and women of executive capacity and tact, each qualified by natural ability and special training for his or her particular task. Otherwise we shall find that there is the danger of inadequate vision and an initial handicap, difficult if not impossible to surmount. No community house was ever built too large. Many have been built too small. The normal community will grow to whatever of seeming excess has been provided, and in this stimulation to physical, mental and spiritual growth lies the inner secret of the whole matter. The influence of the community building is great.

To architects, as a professional group, the chief interest is likely, perhaps, to lie in the building itself,—in its external expression, in its arrangement, in its minutiæ of equipment, and in the soundness of its structural scheme. This should not be the entire interest, however, even to the architect, important and indispensable though it be. The erection of a successful community building is not an arduous task to any architect of good taste who has a sufficiently developed natural aptitude for design and the requisite engineering and business experience to accomplish its realization in many and varied aspects.

Therefore, before analyzing those requirements, which may be considered more specifically the architectural requirements, I should like to dwell, briefly, upon one or two of the fundamentals which have a more direct bearing upon the location of the building and upon its environment as a whole.



Detail, Community Building, Wenham, Mass.
Guy Lowell, Architect

First: Let us not lose sight of the fact, freely admitted among all who are identified with the promotion of facilities for community recreation, that organized play for young and old in the interests of friendly rivalry and pure fun is a very important element entering into the program of the community house problem. Competitive athletic games of all sorts, properly adapted to the requirements of people of the ages participating and properly supervised, are the best media for breaking down artificial reserve as between boys and girls and between men and women. They are remarkable equalizers, quickly developing clean companionship, intimate friendships in large numbers, a riper understanding of age on the part of youth, and vice versa, and an *esprit de corps* of marked benefit to the team work of all groups in their later application to the more purely socialistic problems of the community. The immediate bearing of this consideration of organized play upon the problem of the community building is, obviously, that there be considered only such sites as give ample outdoor environment and space for athletic recreation in the open, space accessible to the building and conveniently arranged with reference to it. Proximity to a good golf course would be ideal, but in default of this there should be at least sufficient space for tennis courts, for hand and volley ball, for wading pools, swings and jingle

gyms, and for the other usual forms of competitive play in the open. The building should occupy not more than 10 per cent of the site,—better by far if it occupy only 5 per cent of the entire allotted area.

Second: The site should be readily accessible to the center of local population. If, in such a locality, sufficient space does not seem to be readily available, make room for it. Few communities will be harmed by the taking of numerous relics of the nineteenth century for this better purpose; many will be benefited.

Third: The site must be made beautiful as well as be ample and accessible. Real estate values and the interests of owners of nearby property alike demand this. The judicious planting of protective shrubbery along borders and the creation of expansive green play lawns serve a triple purpose. They conserve and more frequently enhance real estate values and create beauty. They also aid in administration by giving gateways of restricted access with attendant simplification of the problem of supervision and the maintenance of order. Some fencing of the play area is quite essential and preferably by natural vegetation rather than by wire or wrought iron.

Of the truth of all these contentions I have personally seen the demonstration. In my home city of Newton, Mass., there has been for generations more than lavish provision for the requirements of church life, civic life, country club life, and all that makes for national preëminence in the field of education. We are not without evidences of complacency toward innovation, and several residential sections were inclined to view with alarm the threatened creation of just such community centers as I have outlined. We already had enough of all "advantages." The noise about the new centers would be intolerable. Rough elements were bound to creep in and force us to keep our children at home. The little folks would be placed at the mercy of a more selfish adolescence. Real estate values would be irreparably injured. We should have to sell out to the first comers and move away. Such was the prologue. What is the epilogue? A neighborhood club in the best sense about each such center. Men and women of 50 and over playing tennis, getting acquainted,—courts always full. Spring and fall tournaments, enlisting every boy and girl able to lift a racquet. Similar spring and fall tournaments among men and women who heretofore had imagined that their playing days were over, at any rate for any game other than golf; annual field days; folk dancing; prizes for handiwork and ship models; baseball games; final singles between the local Catholic priest and the Episcopalian vestryman. Such are some of its results.

What kind of a community house for such a crowd? Let us examine it. You may add to it or make eliminations as your immediate problem demands:

Assembly Hall, Community Building, Wenham, Mass.
Guy Lowell, Architect

1. Auditorium:
   a. Audience Hall;
   b. Stage;
   c. Anterooms;
   d. Dressing rooms;
   e. Property and costume room;
   f. Organ chambers;
   g. Toilets;
   h. Foyer;
   i. Vestibule;
   j. Public toilets;
   k. Projection booth.
2. Club Rooms.
3. Banquet Hall:
   a. Kitchen and serving room;
   b. Storage and preparation;
   c. Linen.
4. Swimming Pool:
   a. Attendants;
   b. Dressing rooms;
   c. Shower preparation;
   d. Pool;
   e. Solarium;
   f. Toilets;
   g. Lockers.
5. Pool and Billiards.
6. Bowling.
7. Gymnasium.
8. Card and Game Rooms.
9. Reception and Committee Rooms.
10. Steward's Suite; Office of Caretaker.
11. Service Dormitory.
12. Storage for Athletic Equipment and Supplies.
13. Library
14. Reading Rooms.
15. Writing Room.
16. Coat Rooms.
17. Ticket Office.
18. Domestic Engineering Equipment.
19. Children's Playrooms.
20. Toilets.
21. Heater and Fuel.

The design and function of many of these rooms are obvious enough. A few require some analysis.

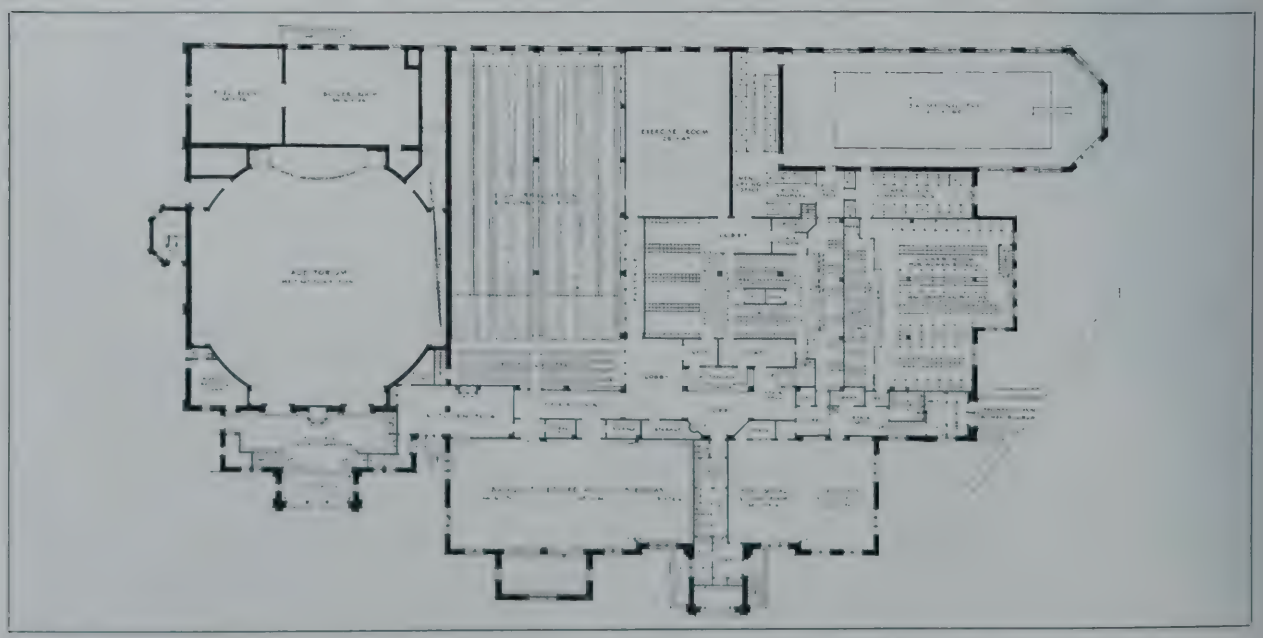
The Auditorium. Where resources permit and where other provision may be made for banquets, dancing and similar activities demanding a level floor, the auditorium should have a permanently sloping floor, developed, preferably, to the involute curve determined by securing uniform clearance of the sight lines to the stage. This clearance to a central focus point 5 feet, 6 inches above a 3-foot stage elevation should be not less than 5 inches for each successive row. The aisles should be sloped to the curve of gradually increasing grade from front to rear, but the fixed seats should be upon level, stepped platforms projecting above it. The sloped surface often adopted under seats is economical but uncomfortable and should be avoided. These stepped platforms, the lowest about 1 inch rise and increasing gradually to about 5½ inches rise, may be of wood over the concrete slab of the structural floor in locations where first class, fire-resistant construction is not demanded by local ordinance. In the latter case, the steps should, of course, also be of concrete. Aisles may be of mastic with countersunk linoleum strips, or they may be of granolithic with or without carpet

Little Theater, Municipal Auditorium, Colorado Springs
Charles E. Thomas and MacLaren & Hetherington, Architects

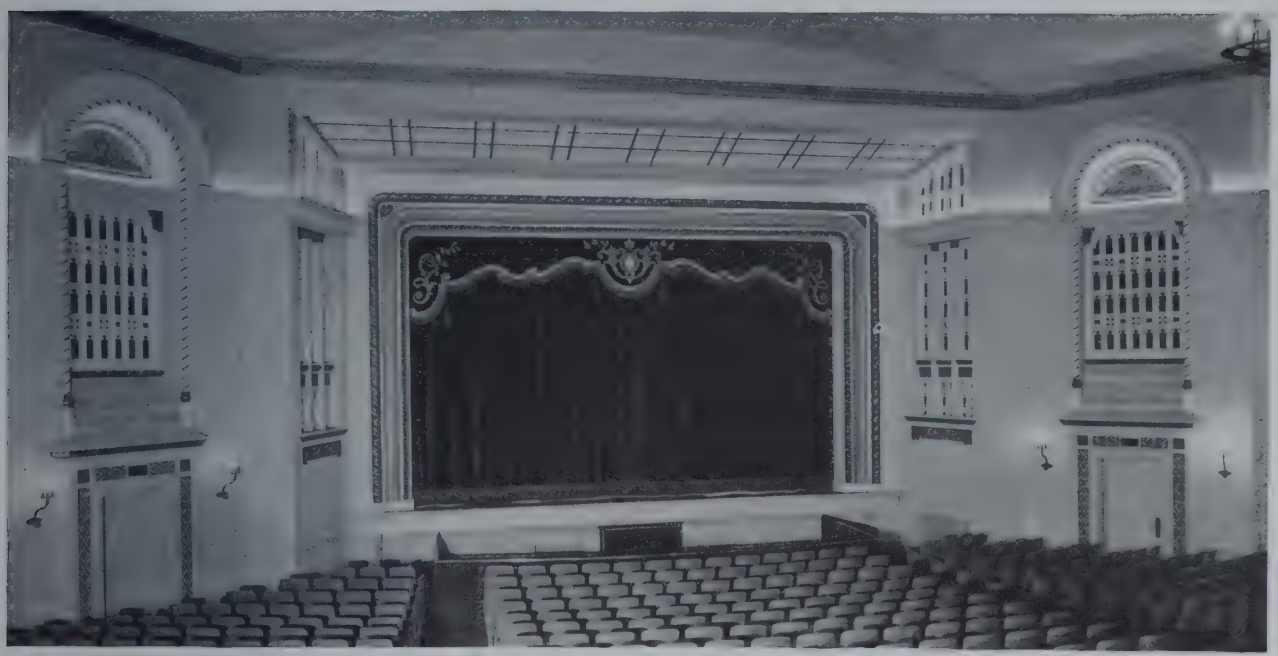
Whiting Memorial Community House, Whiting, Ind.
Shattuck & Layer, Architects

or linoleum strips. Seats, back to back, should not be less than 2 feet, 6 inches; laterally, arm to arm, not less than 19 inches; 21 inches is better and much more comfortable; 22 inches is generous. A central and two side aisles is the best arrangement of aisles, and the square is preferable to the long rectangle as a general shape for the room. Not more than 15 seats should be placed between aisles. Windows should be above a high wainscot and draped to permit ready darkening for the projection machine. Deeply recessed windows give a rich effect, are valuable acoustically to decrease reverberation, and provide space for direct radiation, for control of ventilation, or for a combination of both when desired.

Vaulted or coved ceilings of auditoriums should not be made of hard, smoothly troweled plaster, but should be broken into ornamental stucco caissons in the design or made of some one of the various effectual porous materials promoting sound absorption. Apply the Sabine formula for sound "decay" before you build your auditorium to make sure it will be successful acoustically. There is no longer any excuse for failure in this respect. Two seconds or less for sound "decay" indicates a satisfactory design. The gallery, better at the end than at the side, should also be stepped for sight lines, applying the same



Basement Plan, Whiting Memorial Community House, Whiting, Ind.
Shattuck & Layer, Architects

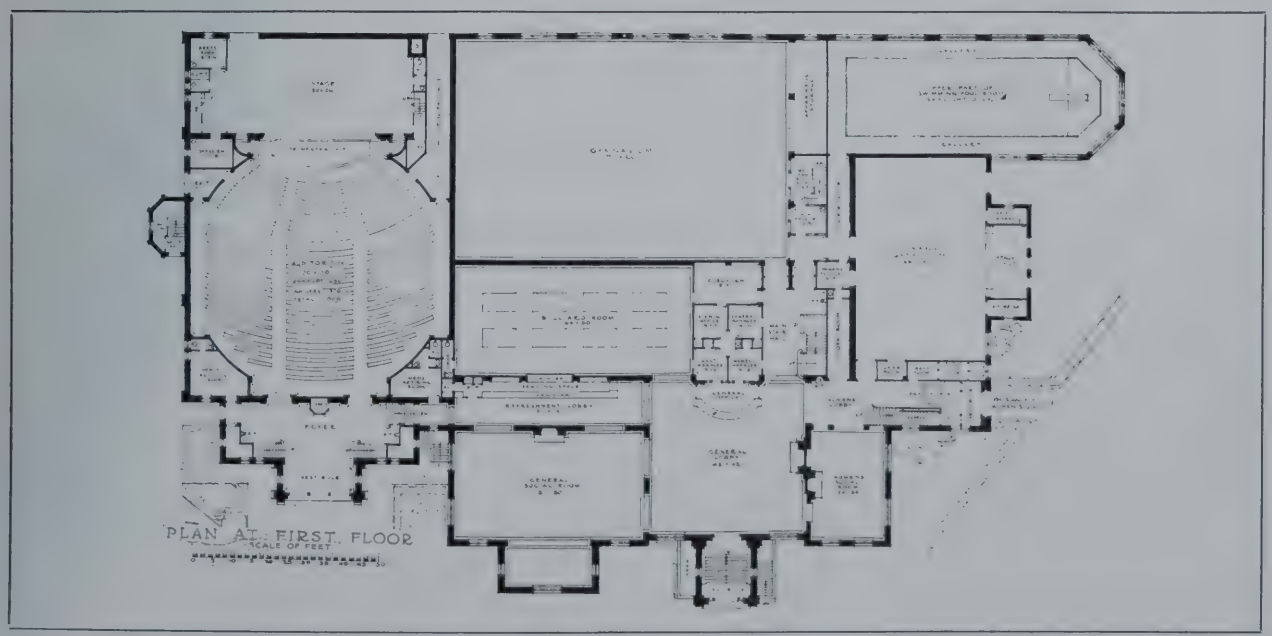


Auditorium, Whiting Memorial Community House, Whiting, Ind.
Shattuck & Layer, Architects

reasoning as in planning the floor. The involute curve will naturally produce steeper stepping as the platforms recede farther and farther from the stage.

If your audience hall, on the other hand, must also serve as a ballroom, with level floor and portable seats, sight lines may be much improved by making the stage level 4 feet above the floor. It should surely be at least this if the floor accommodates more than 300 seats. For artificial lighting chandeliers are better than cove lighting, and they should be so spaced as not to hang within the lines of vision from the gallery. Two or three such chandeliers on the lines of quarter width are usually in all respects satisfactory.

The Stage. The community building does not demand as elaborate a stage as the city theater, but it should be not less than 18 feet deep from back of the proscenium line, and the proscenium should be from 24 to 30 feet wide, with height in proportion. A too prevalent defect in stage design is inadequacy of wing space. There should be at least 5 or 6 feet of free space beyond the proscenium jambs for electrical equipment and for freedom of stage setting and management. Pivoted footlight boards and two lines of border lights on three switches each and connected with rheostat dimmers are sufficient lighting equipment, and a grille height equivalent to twice



First Floor Plan, Whiting Memorial Community House, Whiting, Ind.
Shattuck & Layer, Architects

the proscenium opening is very desirable for quick scenery changes. A paneled wooden back drop, counterbalanced for lifting out of the way, is an ingenious device for giving the stage a permanent look as background for lectures and concerts. The floor should rise about 6 feet for a depth of 18 to 20 feet.

Stage Subsidiaries. Among the essential adjuncts to a modern small stage are the dressing rooms, of which there should be two on each side, with small toilets. These need be only 8 feet high, as the spaces over them are ideal for the installation of an organ. There should also be a large closet for storage.

The organ chambers should rise to the roof, if possible, with an open grille to the stage on each side, extending from 5 feet above the organ chamber floor to the highest point of the chamber and of about 12 feet in width. The grilles should not be stopped below the organ chamber ceiling, since an undesirable sound pocket is thereby created. Similar grilles should open from the chambers into the auditorium, above the proscenium exits, but these should be backed by a closeable shutter operated from the portable organ console. One side usually receives the great and choir organs, the other the swell organ. Each chamber should have a floor area of about 14 feet in width and 16 feet in depth. The height should be at least 20 feet. Proscenium dress curtains should roll on trackers with noiseless tracks. The lifting of a draped curtain requires motor operation.

The Banquet Hall. For community "spreads" the plan should provide between 48 and 50 square feet per table of four, or approximately 12 square feet per person, and a space not less than two-thirds of this ultimate area for the preparation and serving of food. Such a kitchen and serving room space should be a single room, well lighted, with side light and top monitor if possible. In appointments it may vary from a room of very simple scheme, demanding attendance of the caterer with his pre-cooked viands, to a modern serving room with basement food preparation and first floor serving facilities. In the latter and more complete variety, the basement preparation room would receive all stores, and here all pastry and all meats would be prepared. Here also would be the principal refrigeration units. The first floor serving room would contain the ranges, counters for salad preparation, china, silver, and linen stores, dish-washing room, and all appointments for waitresses. No two stewards would agree on all the particulars of such a room, but the kernel of the matter lies in securing such an arrangement of equipment as permits rotary circulation of the waitresses, eliminating crossings and retraced steps. By this means orders may be filled expeditiously, and therein lies the whole secret of delivering and serving food hot.

Swimming Pool. The design and construction of

Jewish Community Center, Washington
B. Stanley Simmons, Architect

swimming pools have become, in comparatively recent years, an engineering specialty. The prudent architect will consult a specialist at the inception of such a project, and that specialist will not be the over-zealous salesman of tile facings nor of water conditioning machinery if the architect is to produce a modern swimming pool of permanent beauty and usefulness. There are weightier matters. When pools are placed in basements, as they normally are in community buildings, care must be exercised in calculating ground water pressures or in making sure that they do not exist. The concrete mat in pressure conditions and the walls of the pool must be of sufficient reinforcement and dead weight to give complete stability to the pool itself when it is empty.

The regulation indoor pool is 25 feet wide and 75 feet long, with shallow end of 3 feet, 6 inches of water and deep end 8 feet, 9 inches to 9 feet. Adjoining the deep end there should be a chamber, also waterproof and pressure-proof, about 10 feet wide and 9 feet deep with its length corresponding to the width of the pool. This chamber receives the water heaters, water conditioners and filters, and all the pumps and terminals of the piping and drainage system. Over this apparatus is the diving platform of the pool, which should not be of less width than 10 feet. The side aisles, 9 feet above water level, should be 4 feet to 4 feet, 6 inches wide, and the platform at the shallow end should be from 4 feet to 6 feet wide. The bottom and sides of the pool, joined at all angles by radius quadrants of not less than 6 inches, should be tiled with small, vitreous tesseræ tile, and the surrounding platforms and room walls may have a varied treatment in encaustic tiles. Concealed wall light fixtures at about 9-foot height give diffused lighting of the ceiling, particularly effective if the ceiling is vaulted. The swimming pool room should be so arranged that access to it cannot be obtained by people in street clothing. The ideal pool is reached only by first passing from dressing rooms through both shower and foot baths, as bacteria multiply rapidly in warm water, and all precautions assuring sanitary conditions must be taken.

Where it is convenient, an adjoining solarium should be provided from which spectators in street clothing may view the swimming meets. This room should be from about 10 to 12 feet wide by the length of the pool room, and separated from it by tightly fitting interior sash and glass of ample size to afford an unobstructed view. This facilitates an entirely different temperature and humidity control of these two adjacent rooms, making the pool room comfortable for the swimmers and the solarium less warm and less humid for the comfort of the spectators.

Close to the deep end of the pool, on each of the long sides, there should be inserted a recessed tile

Community Building, Chisholm, Minn.
E. C. Giliuson, Architect

ladder of five tile rungs, opposite the top of which is a 2½-inch brass standard placed in the tile walls to be used as a "pull out." The tile for the bottom and sides of the pool should be white ceramic, ¾ inches square except for the racing lines inset in the bottom of the pool and running longitudinally 5 feet on centers, giving five divisions in the width of the pool. The gutter face is usually in colored tile with each 1-foot subdivision of length marked by contrasting tile and each 5-foot subdivision by inset tile numerals. A satisfactory wainscot would be of 7 by 6-inch bright glazed sanitary base and 2 by 6-inch cap, with dado of 1 by 2-inch sand gray tile laid in basket pattern not less than 4 feet, 6 inches high but preferably 7 feet or more, according to the design of the walls. The "high" diving board should be used only in rooms that are at least 16 feet high above water level, but the usual "low" board may safely be used in a room as low as 12 feet. The board should be 1 foot, 8 inches wide and 12 feet long, supported on a pipe frame with rubber-covered, movable fulcrum. The distance between fixed end of board and pool edge should be 7 feet, 6 inches, and the thickness of the board tapered from 3 inches at the fixed end to 1½ inches at the spring end, the latter 2 feet, 6 inches above the water level. The foot tubs in passages from shower room to pool should be 6 inches deep, with standing wastes holding water to 4-inch depth, and the size of the foot tub should be 3 feet in width and 5 feet in length to prevent hurdling.

The foregoing paragraphs cover the essential details of such rooms of the community house as are within the scope of specialists and represent conservative current practice in the particulars mentioned. The other rooms of our program can obviously be determined only by careful study of plan arrangement and will vary in number, in dimensions and in treatment with the demands of logical design for the program adopted. Their detailed practical requirements are simple and seem to require no explanation.

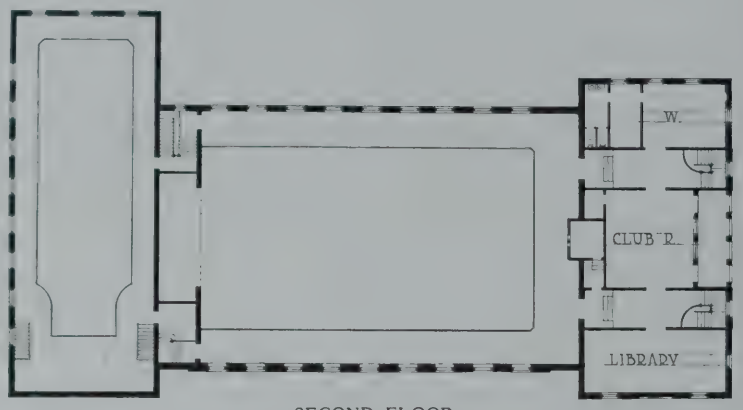
In design the community house should embody and perpetuate the best local architectural traditions, where any exist. In materials it should anticipate vigorous use and recognize the virtue in ease of maintenance. Experience demonstrates that such buildings, generously conceived, are immensely popular among people of all ages at all hours of the day. They are remarkable if, indeed, they are not almost unique, as instrumentalities for the re-animation of public spirit and local pride. When clothed in an architectural garb of good taste in all elements of their environment and furnishing, they are an early and potent stimulant to the love of beauty and good sportsmanship inherent in all normal youth and are the natural birthright of all forward-looking communities. They help powerfully to make good citizens.

Recreation Building, Miller Beach, Gary, Ind.
George W. Maher, Architect

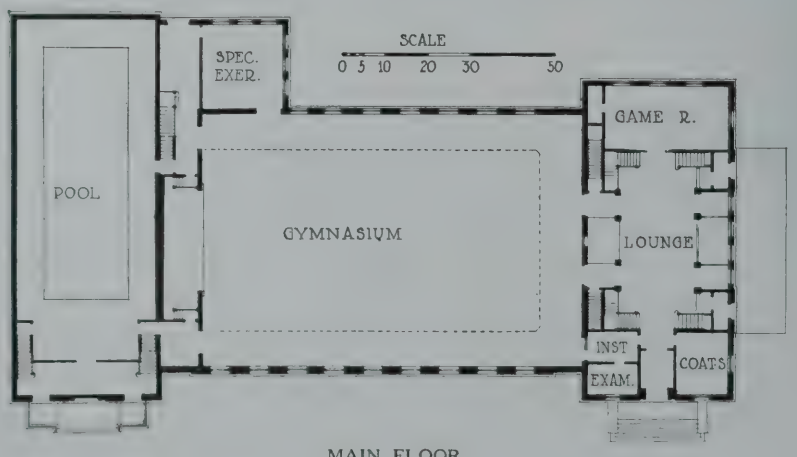
GENERAL VIEW

Photos. Paul J. Weber *Plans on Back*

MAIN ENTRANCE, RECREATION BUILDING, WHITINSVILLE, MASS.
JOSEPH D. LELAND & COMPANY, ARCHITECTS



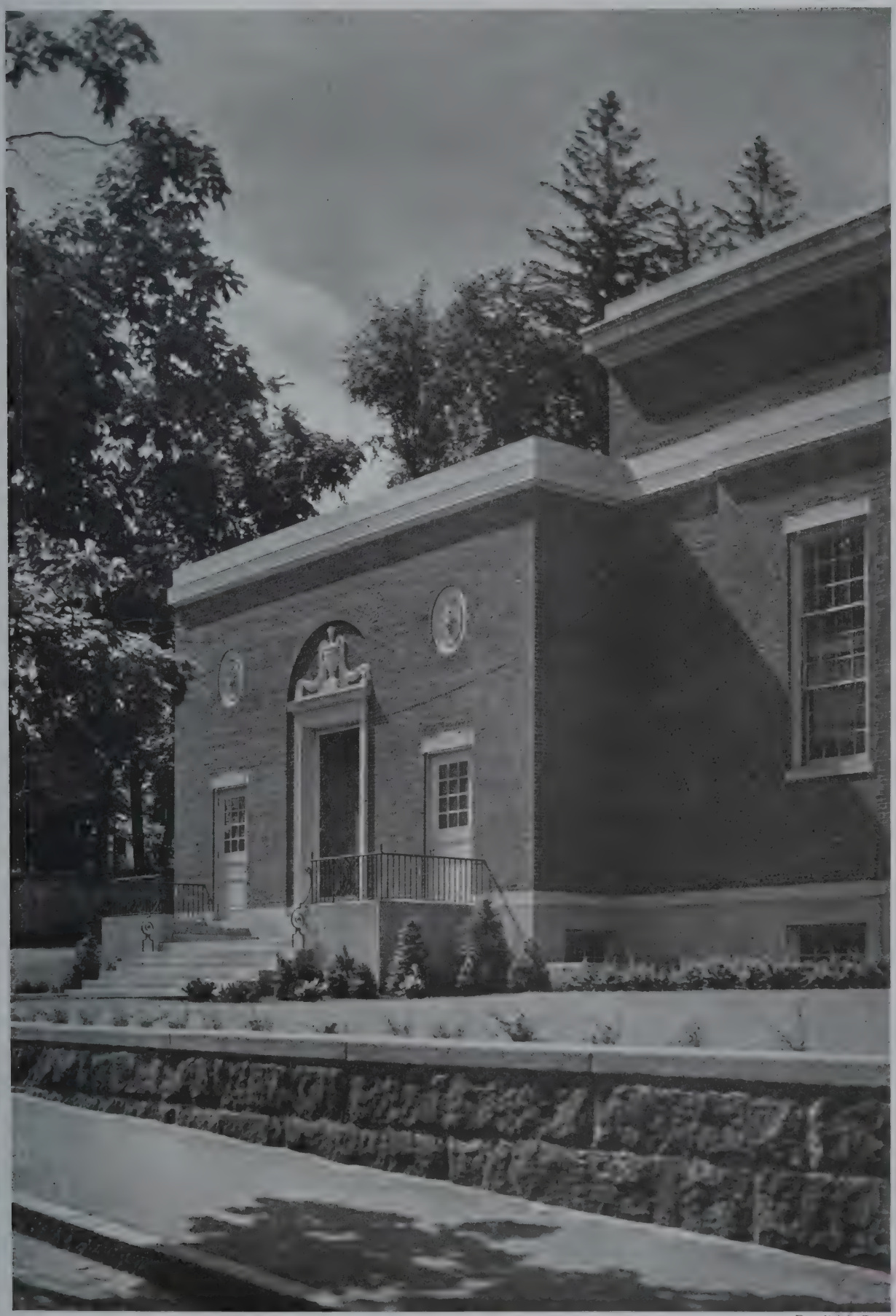
SECOND FLOOR



MAIN FLOOR

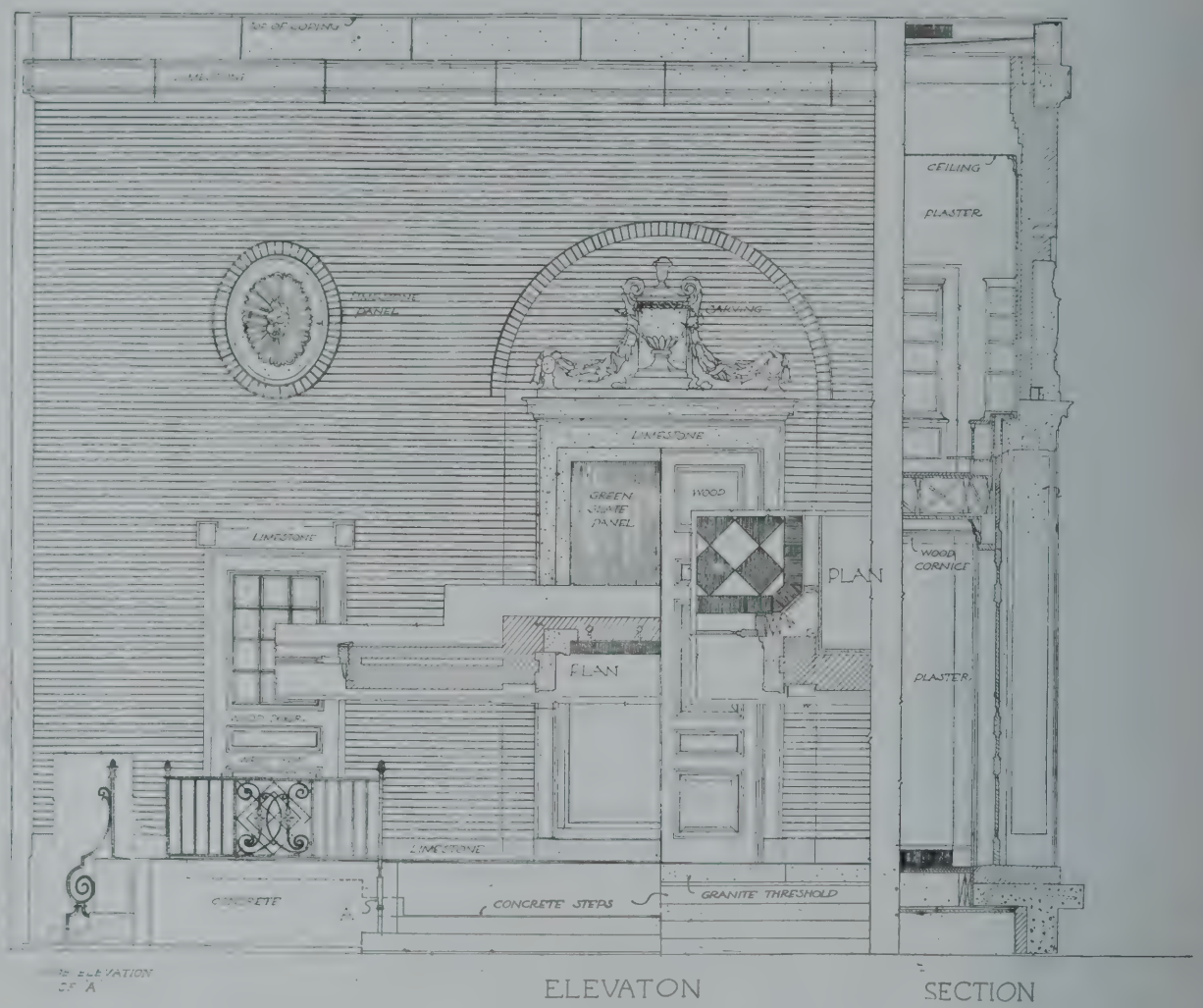
PLANS, RECREATION BUILDING, WHITINSVILLE, MASS.

JOSEPH D. LELAND & COMPANY, ARCHITECTS



Detail on Back

ENTRANCE, RECREATION BUILDING, WHITINSVILLE, MASS.
JOSEPH D. LELAND & COMPANY, ARCHITECTS



DETAILS OF GYMNASIUM AT WHITINSVILLE, MASS.

J. D. LELAND & COMPANY ARCHITECTS & ENGINEERS
BOSTON AND WORCESTER, MASS.

SCALE IN FEET
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RECREATION BUILDING, WHITINSVILLE, MASS.

JOSEPH D. LELAND & COMPANY, ARCHITECTS

No. 37

Photo. Paul J. Weber *Plans on Back*

GENERAL VIEW

COMMUNITY HOUSE, WENHAM, MASS.

GUY LOWELL, ARCHITECT

Photo. Arthur Cushman Haskell

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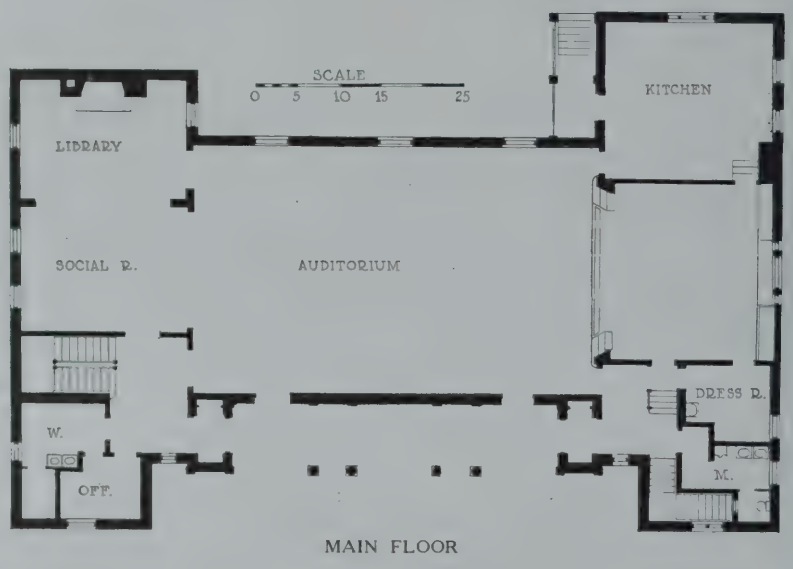


MAIN FLOOR

PLAN, COMMUNITY HOUSE, WENHAM, MASS.

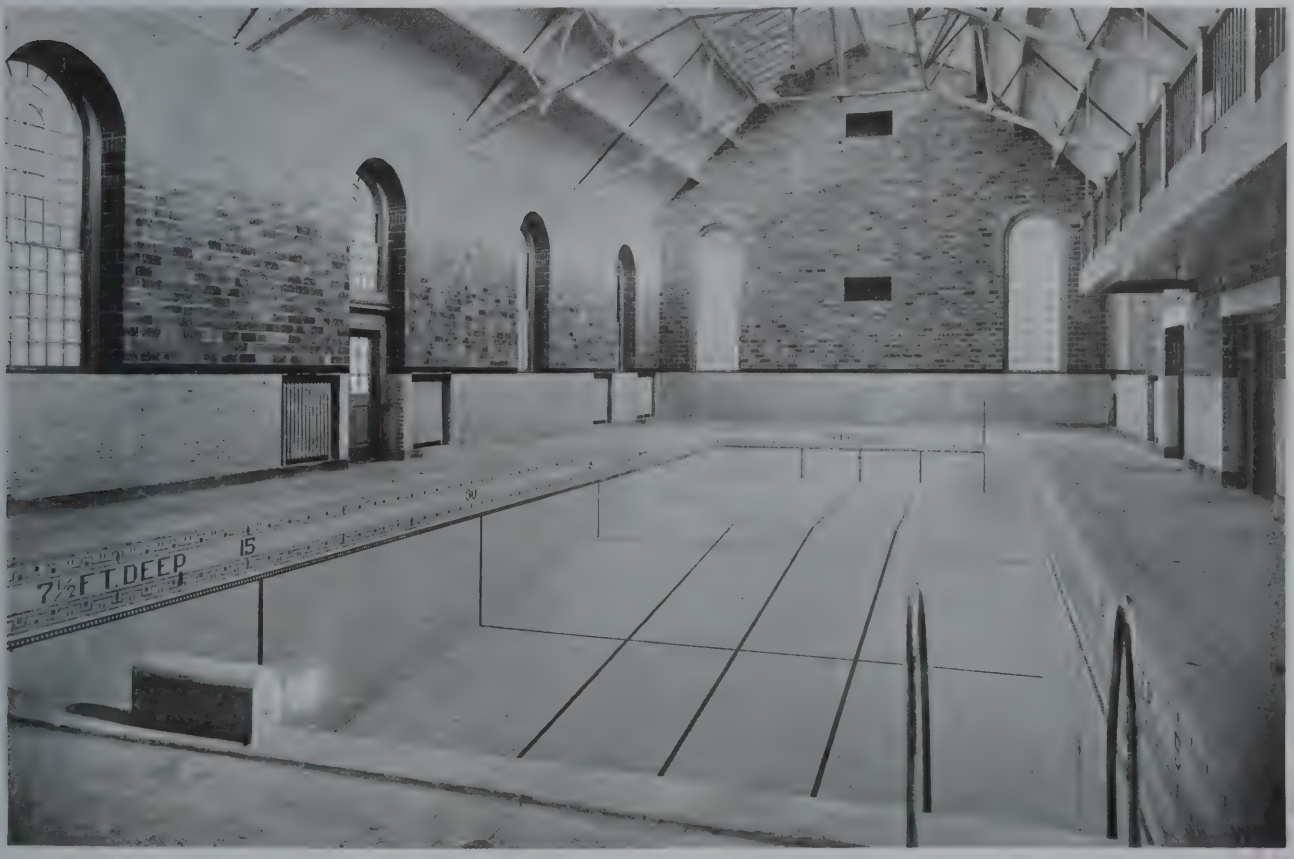
GUY LOWELL, ARCHITECT

Photos. Paul J. Weber *Plans on Back*

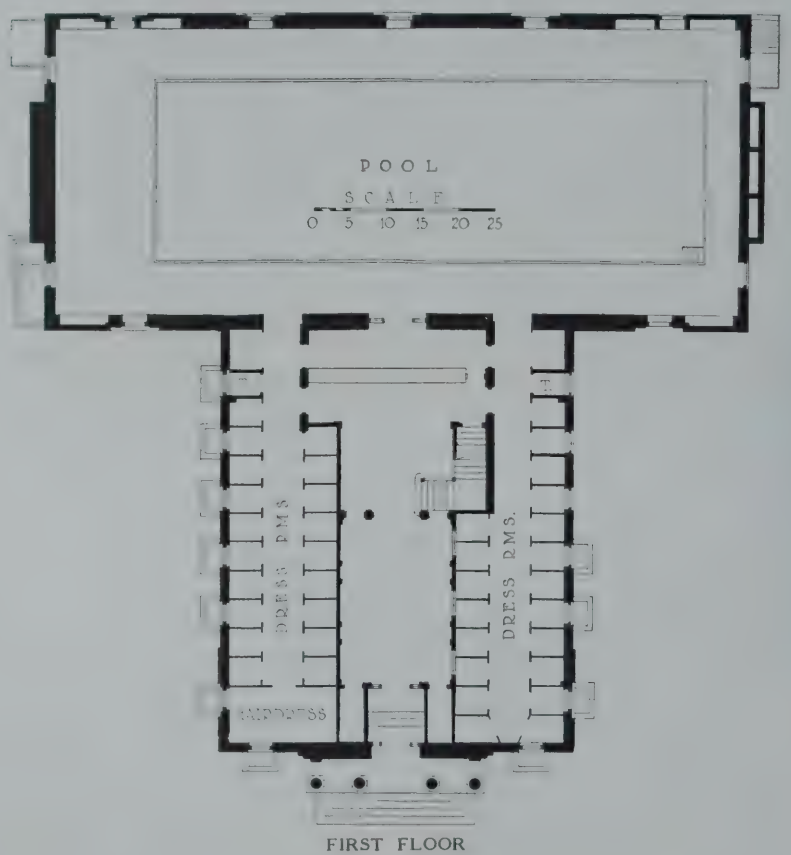
GENERAL VIEW

CIVIC LEAGUE BUILDING, FRAMINGHAM, MASS.

CHARLES M. BAKER AND STANLEY B. PARKER, ARCHITECTS



SWIMMING POOL



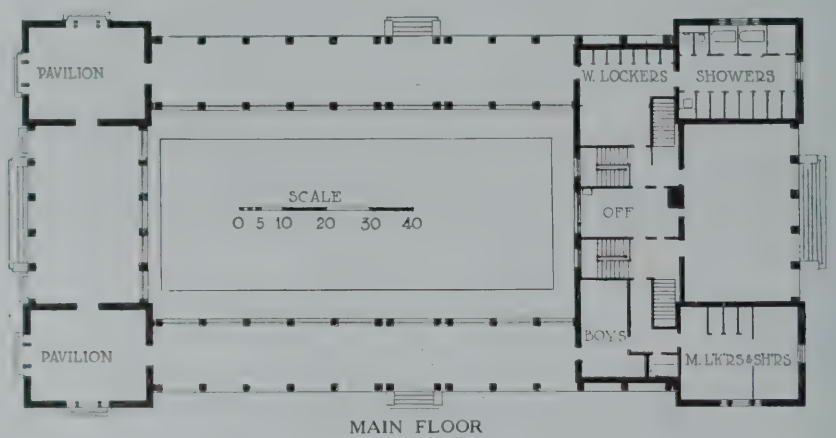
PLAN, CIVIC LEAGUE BUILDING, FRAMINGHAM, MASS.

CHARLES M. BAKER AND STANLEY B. PARKER, ARCHITECTS

Plan on Back

PUBLIC BATH IN THE GROVE, KANSAS CITY
WIGHT & WIGHT, ARCHITECTS

SWIMMING POOL



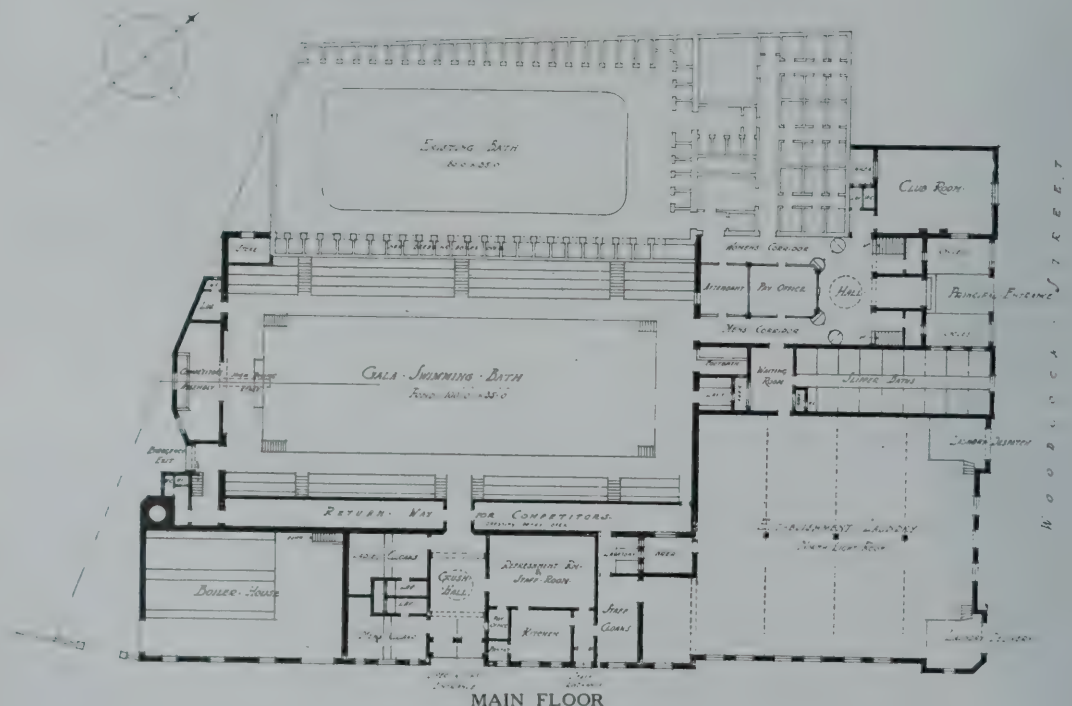
PLAN, PUBLIC BATH IN THE GROVE, KANSAS CITY

WIGHT & WIGHT, ARCHITECTS

Plan on Back

WOODCOCK STREET BATHS, BIRMINGHAM, ENGLAND
ARTHUR MCKEWAN, ARCHITECT

SWIMMING POOL



PLAN, WOODCOCK STREET BATHS, BIRMINGHAM, ENGLAND

ARTHUR MCKEWAN, ARCHITECT

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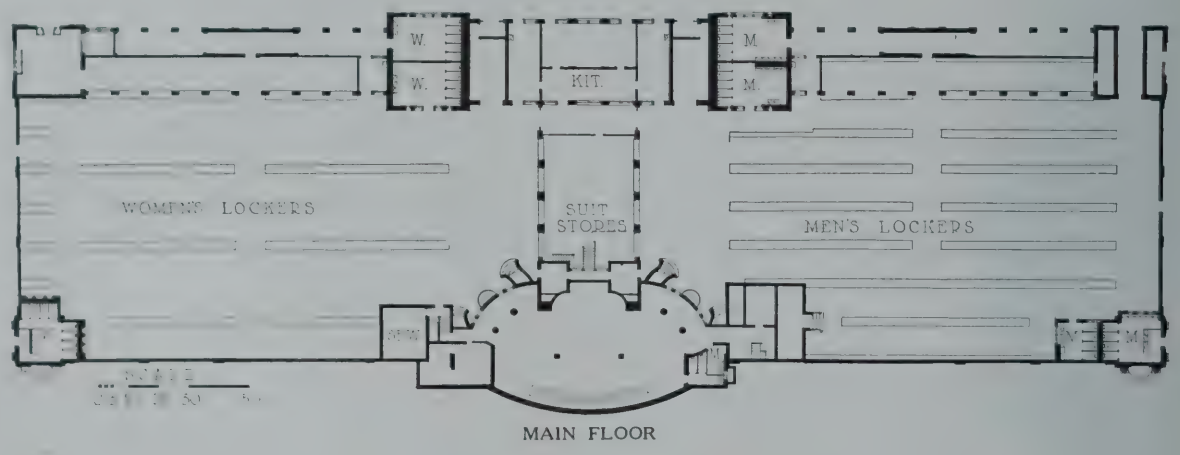
Plan on Back

SUNNYSIDE BATHING PAVILION, TORONTO
CHAPMAN, OXLEY & BISHOP, ARCHITECTS

VIEW FROM THE BOULEVARD



PLAN, SUNNYSIDE BATHING PAVILION, TORONTO

CHAPMAN, OXLEY & BISHOP, ARCHITECTS

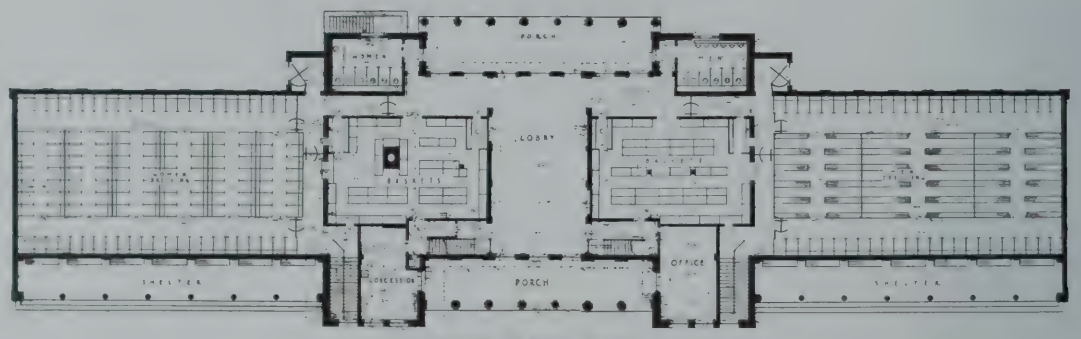
Photos. Tebbs & Knell, Inc. *Plans on Back*

SWIMMING POOL BUILDING, TIBBETT'S BROOK PARK, NEW YORK

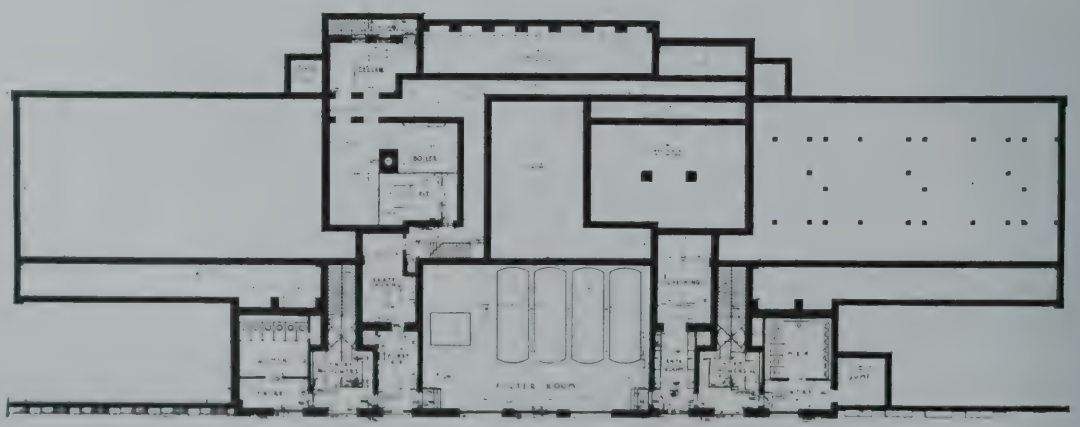
O. J. GETTE, ARCHITECT; GILMORE D. CLARK, LANDSCAPE ARCHITECT

SOUTH ELEVATION AND POOL

SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT PLAN

PLANS, SWIMMING POOL BUILDING, TIBBETT'S BROOK PARK, NEW YORK

O. J. GETTE, ARCHITECT

The Designing of Public Baths

By O. J. GETTE

THE contamination of the beaches near large cities and the wide interest throughout the country in swimming and bathing generally have promoted the building of both indoor and outdoor swimming pools. With the modern provisions for keeping pools sanitary, the danger of contracting a communicable disease has been reduced to a minimum. The amount of benefit derived by the public from a pool is not at all comparable with the cost of it.

When an outdoor pool is located so as to be within easy walking distance of main arteries of traffic or car lines, it is a splendid idea to combine it with an indoor pool. By combining the two pools the filtration plant or system can be made to serve both pools, and year round bathing can be enjoyed. In estimating the size of an outdoor public or commercial pool, about 20 square feet of wading surface should be allowed for each bather and 50 square feet of deep water or diving area. This pre-supposes that four-fifths of the bathers use only the shallow part of the pool. It will be noticed at all pools and in illustrations of them that less than 25 per cent of the bathers use the diving or deep parts of the pools. The major part of the pool should have no water over 4½ feet in depth, while the remaining portion should have a depth of 9½ feet. The large amount of shallow water space is demanded by reason of the great number of children and non-swimmers who are patrons. The general practice had been to slope the pool from its edges gradually to the center, but the bettre plan is to have the deep part at one end. Of course this deep part will need a protecting railing, but there is a decided advantage in having the shallow part of the pool available in its entirety, from the point of view of safety as well as for the convenience of bathers.

Pools of rectangular shape are the easier to build, but an outdoor pool having an irregular outline well studied will add interest to the entire architectural plan and is more pleasant to use. Expansion joints must be provided to prevent cracking in the floor slabs. The site for the pool should be so selected that the natural drainage is good besides being conveniently located so as to attract the greatest number of people. When a pool is to be located in a large public park, the question of water supply and proper disposal of waste must be carefully considered. There is quite a waste of water in a pool, owing to the water splashing and running into the overflow gutter as

Photo. Amemiya

Public Bath No. 4, Yonkers, N. Y.
O. J. Gette, Architect

Photo. Tebbs & Knell, Inc.
Porch Overlooking Pool, Tibbett's Brook Park, New York
O. J. Gette, Architect

well as by daily evaporation, so a continuous and entirely adequate water supply must always be available.

One of the problems of the builder of an outdoor pool is how to keep the beach walk surrounding the pool for the exclusive use of the bathers. This can best be accomplished by having the administration and dressing room spaces at an upper level and requiring the bathers to go to the pool by means of ramps or stairs. This has the additional advantage of lessening the number of attendants required by having entrances and exits to the pool where only the bathers can use them. It is understood that the pool should have a stout enclosing fence. Permanent, fixed seats should be provided for the bathers around the enclosing wall or fence. The space surrounding the pool should always be paved with concrete, as a sand beach is not practical, although commercial pool promoters are partial to them. The sand beach requires continuous raking and combing, besides needing sterilization every day. In addition, the bathers carry and track the sand into the pool and the bath house, all adding to the general upkeep and expense. At some commercial pools the promoters have arranged for a sand beach at one end of a pool. This is a compromise treatment. The surface of the concrete pavement abutting the pool for a width of not less than 18 inches should have some non-slip ingredient mixed in the top surfacing. The pavement can be laid out in a series of panels, using different colors to create an architectural effect. Smooth pebbles not over ¾-inch in size are sometimes incorporated in the top coating of the larger panels, although great care must be taken to make sure that the pebbles do not project too far beyond the surface. It must be remembered that the bare feet of the bathers are sensitive, and every precaution must be taken to minimize the danger of bruising. The beach walk adjacent to the pool should slope *away* from the pool so that it will be cleaner. Careful attention to the sanitary features in connection with any pool is an absolute necessity. In all public and commercial pools bacterial tests of the water are required and should be made at frequent intervals. The purification of swimming pool water has been covered in several articles in THE FORUM, and in general there are three systems used in combination with filters,—sterilization by chlorination, ultra-violet rays, and ozonation. All these systems are good.

The prime factor in the successful operation of any pool is the ability to get the bather in the pool as soon as may be, and out of the bath house as quickly as possible when he has finished bathing. As it always happens, a large number of bathers get in and out of the pool about the same time. This is the cause of much congestion. Too many wanting to dress at once causes delays at the room where the clothing is stored, and the situation is at times very difficult to handle. It has been found in most public bath houses that a system of wire or sheet metal baskets for checking the bathers' clothing is the most economical of space. These baskets are handed to the bathers after they have passed the cashier and entering turnstile. After securing desired towels, the bather then proceeds to a dressing stall or general dressing compartment and puts his clothing in his basket. On his way to the pool a window or counter must be passed where the basket is left, and the bather is given a metal check which he carries with him. These baskets are of varying sizes; the average dimensions for a public pool are about 11 inches wide at the top, 9½ inches wide at the bottom, 23 inches long, and 9½ inches deep. For commercial pools they are usually made as large as 15 inches wide at the top, 13 inches at the bottom, 32

inches long, and only 7 inches deep.

The objection to a basket system is that the clothes become badly wrinkled by compressing them in limited spaces. If the baskets are made too large, they become unwieldy to handle. The plan of having bathers leave their baskets at a window or opening as they go to the pool or returing them to the office when they leave has a tendency to limit the speedy emptying of the bath house as waiting lines are formed. Another plan is to have the basket room along the length of the dressing room area, with a counter the full length of the basket space. This allows a larger number of bathers to check in or out at one time, but it may require more attendants. In large pools operated by private enterprise there has been some objection to the use of the basket system, and individual lockers are provided. These lockers are arranged in groups of four in each dressing room, lettered A, B, C, and D, with the numbers from one to whatever number of dressing rooms there are. On entering the bath house the first bather is given a key to a locker numbered 1-A, the next bather 2-A, and so on until all the A lockers are in use. Then the B lockers are put in use, and after that the C and D. With this system the chance of the holder of the A check wishing to use the dressing room at the same time as the holder of a B or C check has been lessened, making for convenience.

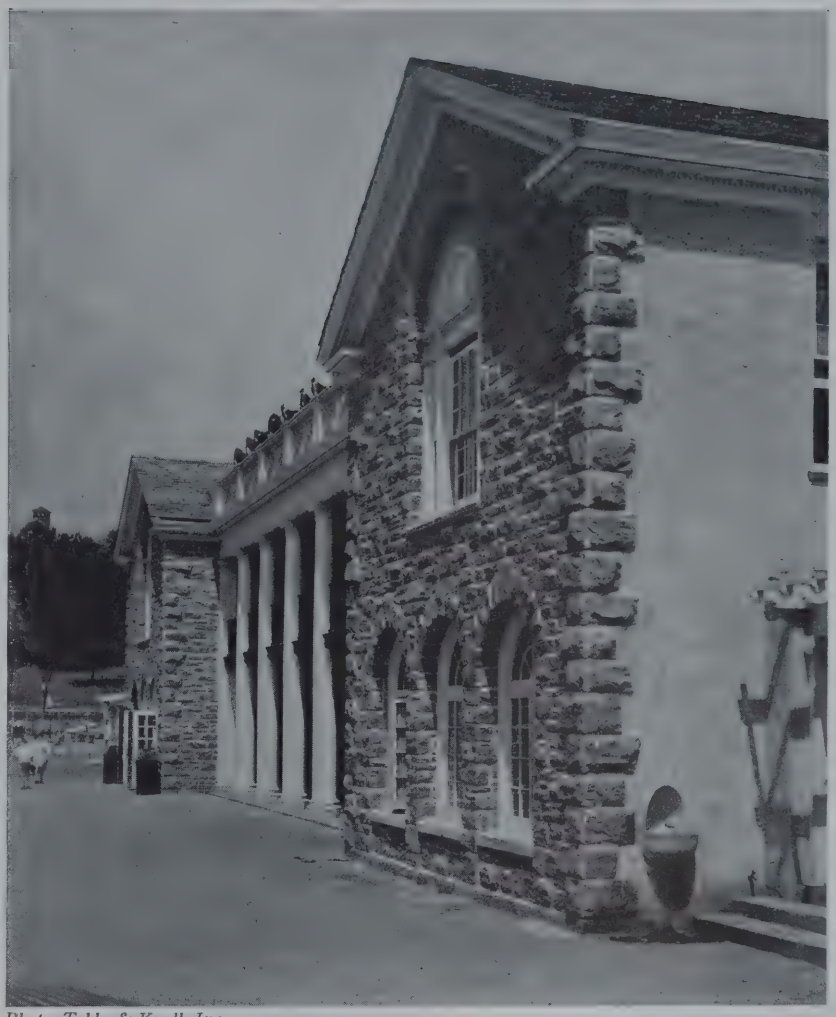


Photo. Tebbs & Knell, Inc.

South Elevation, Public Bath House, Tibbett's Brook Park, New York
O. J. Gette, Architect

For an outdoor pool the dressing room should be exposed to the open air as much as practical and the aisles should not be roofed over. The women should have individual dressing rooms. A number of dressing rooms should be provided in the men's side also. The general dressing room for men and that for boys are provided with long benches. When the basket system is used and the baskets are stored on racks in a room, a ventilating system of ducts with intakes at regular intervals and suction fans should be provided. This will be found very necessary to keep the basket room in a wholesome condition. Of course this ventilating system will not be required where the basket room has one or more entire sides open to the outer air. Whether the basket or the locker system is used, every part of the bath house must be well ventilated and exposed to the sunlight as much as can be arranged. A room is required for checking the bathers' valuables, or during a slack period this is often done by the cashier. For this purpose in many bath houses, small, numbered compartments are provided in racks, the average size being 3 inches wide by 7½ inches high by 10 inches deep.

As a rule the floors of the dressing room spaces are of concrete sloped to outlet drains so that the entire space can be flushed out by means of a hose. In the construction of the dressing rooms and compartments for the outdoor pools it has been found that the combination of asbestos panels with wood rails and stiles supported on brass or galvanized pipe standards is very economical. The roofs would be of corrugated asbestos sheets ½-inch thick. This construction reduces the fire hazard, and in using the asbestos lumber the upkeep costs are reduced. The average size of the individual dressing room should be 3 feet by 4 feet, 2 inches. The seats in the large dressing compartments are best made of oak slats about 2¾ inches wide by 1⅜ inches thick, secured with brass screws to oak pieces expansion bolted to concrete pedestals. The seats should be secured to the floor to prevent shifting and consequent lessening of efficient operation in the hard use they receive.

Before the bather enters the pool he should be compelled to take a shower. In public pools a compulsory shower is often installed in such a way that to get to the pool one must go through a shower pas-

Photo. Lewis & Randall, Ltd.

Entrance, Woodcock Street Baths, Birmingham, England

Arthur McKewan, Architect

sage with an overhead pipe line from which at regular intervals shower heads project. The sprays are so arranged that a good shower is given each bather whether he will or not. Foot sprays should also be provided, and in addition a shallow pool about 6 inches deep through which each bather must wade is often part of the shower aisle. In commercial pools or pools promoted by private enterprise, a battery of showers is generally provided, conveniently located near the entrances to the pool for the use of bathers.

Indoor pools being smaller, the problem of handling crowds is not as difficult, particularly as the attendance lessens as the cold weather approaches. The dressing rooms in public baths where there are no pools, or where the object is merely to secure cleanliness, are generally provided with individual shower compartments. These combined shower and dressing compartments should be constructed of either slate or marble. The standard size is 3 feet, 6 inches on centers for the width and 7 feet, 6 inches deep, half of which is dressing space, separated from the shower compartment. Every dressing compartment should be covered over the top with 1½-inch mesh on galvanized wire, set in 1-inch channel frames and securely fastened to the partitions. The seats of either slate or marble are generally quarter-round in shape, set in corners. Besides these compartments, general dressing rooms should be provided with benches and metal lockers to take care of any large crowd or swimming meet. In public bath houses located in the congested parts of cities, individual baths, showers and tubs, are in great demand, and are used by many in preference to the pools. A general rule is one tub to 20 showers. In bath houses where there are pools the dressing rooms are often planned in groups of three or more, and a shower is installed for each group. The doors to the dressing compartments should be fitted with hinges that keep the doors open when the rooms are not in use. A very important feature for pools, particularly where they are promoted and operated under community recreational commission programs, is to have ample space for spectators. The interest in competitive swimming meets has had its share in popularizing the pool.

The matter of the proper locations and the sizes of toilet rooms requires careful attention. For outdoor pools there should be toilet rooms in connection with the dressing room space, and if they are not convenient to the pool it will be necessary to locate additional toilet rooms accessible from the pool. It is well to have toilet facilities directly accessible from the pool, and placing these close to the toilet of the dressing rooms makes for economy and efficiency in plumbing. For indoor pools the toilet rooms are planned in connection with the shower and tub rooms, with urinals easily available from the pool. Toilet rooms should also be provided for the general and non-bathing public. A good rule to follow for indoor pool and shower bath houses is to allow not less than one water closet and one urinal for every 15 showers for the men and one water closet for 15 showers or tubs for the women. For outdoor pools, assuming that 1000 men bathers and 800 women bathers can be accommodated at one time, 15 individual showers should be provided for the men and 10 for the women. The toilet rooms for men should provide 10 water closets and 15 urinals, and there should be at least 12 water closets for the women. The water closets should be of a heavy type, fastened to the wall, and with a utility corridor back of them. Drinking fountains should be provided for both the dressing room space and at the pools. These should be of the non-freezing type for outdoor pools. A first aid room is always needed

for an outdoor pool and should be incorporated in the bath house. This room should be located so as to be easily accessible from the pool. The office and rooms for life guards, instructors and attendants can generally be grouped with this.

For public outdoor pools, as distinguished from commercial pools, the towel service and laundry are not so important. As a rule, the patron of the public pool brings or is required to bring his or her own bathing suit and towel. Provision, however, is made for the renting of a towel at a small charge, with the addition of a deposit covering the cost of the towel. If this deposit were not required, there would be very few towels returned. Renting of bathing suits at public pools is seldom done. However it is wise to provide for the sale of bathing caps, water wings, or other floating devices by the office management or the concessionaire. At commercial pools the custom of renting bathing suits is more prevalent, although it has been disappearing very rapidly of late. The towel service is still an important item, and together with the washing of the bathing suits it requires a regularly equipped laundry, for which provision must be made. The towels are sometimes supplied by a towel supply company. In city bath houses the admittance charge, always nominal, includes the use of a towel. These bath houses are usually located in sections where the people have not adequate bathrooms or bathing facilities in their own quarters.

View of Bathers' Entrance, Sunnyside Bathing Pavilion, Toronto
Chapman, Oxley & Bishop, Architects

The water in outdoor pools, except in the most exceptional cases, is not heated, the shallow water in the major part of the pool getting all the benefit from the sun and summer winds. Indoor pools naturally require the water to be heated. This is usually done by an instantaneous heater installed as part of the house heating system, with a pump having an electric motor. As a rule for a pool of say 30 by 75 feet, this heater should be able to heat 150 gallons of water per minute from a temperature of 35° to 80°. The pump should also deliver an equal quantity of water per minute. The radiators for indoor bathing houses should in the shower and pool rooms be recessed and covered with grilles. Particular care must be given to securing proper ventilation, and exhaust fans should be installed in the shower rooms as the condensation in both this and the pool rooms is always annoying otherwise. In the pool room this condensation can be lessened to a considerable degree by keeping the temperature of the water the same as the temperature of the pool room, and by placing heating coils near the skylight. The lighting of outdoor pools by means of either flood lights, arc lights or reflected lights adds to their value from a commercial standpoint, and it naturally lengthens the time that the pools can be used. This is particularly so in commercial pools which are used at night, where the time of use is an important factor. The lights should be well distributed and at a sufficient height to be properly diffused in order that the pool be well lighted.

The use of an outdoor pool is not limited to the summer months, as it can be used for a skating rink in winter, providing it is properly constructed. The Westchester County Park Commission has recognized this in building its pools, provisions being made to check the articles of apparel for either bathers or skaters. In addition, the upper part of the bath house provides a large area for a dance or assembly room. At many outdoor pools, concession space (if provided) is an added source of income. At many pools regular restaurant service is maintained, and the revenue obtained from the leasing privilege helps to pay some of the maintenance charges. There is no reason why a public pool should not meet all current expenses, even though there is only a nominal charge

for the bathing privilege and though on two mornings of each week there is no charge made for its use.

For outdoor pools a clock large enough to be easily visible from any part of the pool and beach walk is a desirable feature and should be incorporated in a prominent part of the building. One or more spraying fountains erected in an outdoor pool, although of no sanitary value, give the average bather a certain sense of satisfaction in that one sees fresh water continuously discharging into the pool. If these fountains are electrically illuminated for night bathing it will add a great deal to their attractiveness. Provisions must be made for diving boards at the deep water part of the pool. These are generally constructed in accordance with the rules of the athletic association having jurisdiction over swimming. Diving or spring boards are generally covered with rubber or other similar non-slip material. Other features such as chutes, slides and high diving platforms are often provided and add to the general popularity of a pool, frequently attracting new patrons.

For the interior finish of the bath house in connection with the outdoor pool the simplest material should be used. The walls of all lobbies, halls and basket rooms should be preferably of semi-glaze or impervious brick, tile or other sanitary finish. The walls of all indoor pool rooms, shower rooms, toilets, etc., should also be of similar materials. Woodwork should be eliminated as much as possible. Provision must be made at pools for life buoys and other safety devices. At large pools elevated seats are often built for the use of life guards, since constant supervision is essential. It is of the utmost importance that accidents be prevented, as far as it is humanly possible, by strict regulations governing the use of the pool, and by constant and strict supervision by the guards.

Photo. Tebbs & Knell, Inc.

Bath House, Tibbett's Brook Park, New York

O. J. Gette, Architect

The Architecture of Public Water Works

By KENNETH KINGSLEY STOWELL

IN years past the trolley car marked "Water Works" in most American cities came to a stop in the most bedraggled outskirts of town, and ugly brick buildings stood up stark and forbidding. One thought of the "water works district" and the "gas house district" in the same mental breath. Though this condition still exists to some extent, there is a marked tendency to make the city water supply districts attractive as parks and the buildings themselves a source of civic pride. The public spirited civic bodies have realized that a water supply system can be made an ornament as well as a necessity, and that an æsthetic improvement has an economic value as well. Even the old dam has been shorn of its weeds, and the new dam, even if it be of naked concrete, has been studied for symmetry and form as well as for strength. This progress is bound to continue. There is an opportunity for architects to further this development, either in the remodeling of obsolete buildings or in exerting their influence to secure the erection of new structures of good architectural design, though perhaps low in their cost.

Detail, Pavilion, Kensico Dam
York & Sawyer, Consulting Architects

The architect's problem in the designing of water works buildings deals almost entirely with the exterior. The interior is of necessity simple and open for the installation of pumps, valves and various kinds of machinery. The filter building's interior does allow of some more architectural treatment, as the instruments to be housed are small, and there are no large operating machines, as will be seen in one of these illustrations. The exterior design of the pumping station has in many instances been treated more or less successfully in various styles. It would seem that one style that would be particularly suitable for adaptation has been woefully neglected,—the Italian Romanesque. In this the material would be the simplest and cheapest,—brick, properly laid, with a small amount of stone, and yet how much character and beauty there are in round arches, corbeled cornices and tile roofs! There is in the Italian Romanesque a vast amount of design material on which the architect can draw for inspiration and motifs. Here we can have brickwork at its best at very little greater cost than the atrocious work so often seen. However, this is not the only style available; a design in the very modern manner can be equally effective. The new manner of dealing with solids and voids in a large way, rectangularism or cubism, if carefully studied, can be carried out successfully. I refer to the strong, simple handling found in the Bush Terminal in New York or the Ford plant in Detroit, and elsewhere.

When the City of New York undertook the great expansion of its water supply system, it had the wisdom to have architects coöperate with the engineers. It established an architectural office under the direction of Lincoln Rogers, and appointed York & Sawyer consulting architects. Its wisdom is evidenced by the excellence of the results in all the work, from the small gate-valve house to the great Kensico Dam itself. For the most part the buildings are of stone and are designed in the strong and massive Italian Renaissance style. The dam is in perfect accord with the work of this period, though of original conception, and it is of consistently vigorous execution.

It seemed to the architects that previous dams were unsatisfactory for several reasons. First, because an enormous wall was usually built of fairly uniform-sized stones, and however great the sizes of the individual blocks, the wall itself had at a distance no definite scale. Second, that its great curved surface, against which the earth was back-filled at either flank of its buttressing hills, usually disappeared irregularly into the ground, leaving the dam without a base and with unsymmetrical ends. Third, that its crowning motif, usually some type of a building cornice, was inadequate. Fourth, that the face of the dam was not one continuous curve, a true hyperbola, but was the result of starting at the top with a short radius which was increased three or four times as the surface approached more nearly a 45° slope; the angles between these different curves, as seen from the end of the dam, were usually apparent. Fifth, that while above the dam a great body of water added a charming feature to the landscape, below the dam there was likely to be a foreground irregular and unkempt and usually arid and bare, perhaps because of the reflected heat from the great face of masonry, though this is mere conjecture.

The Kensico Dam has, moreover, a new characteristic. It is divided through its entire structure by vertical expansion joints about 80 feet apart, and it

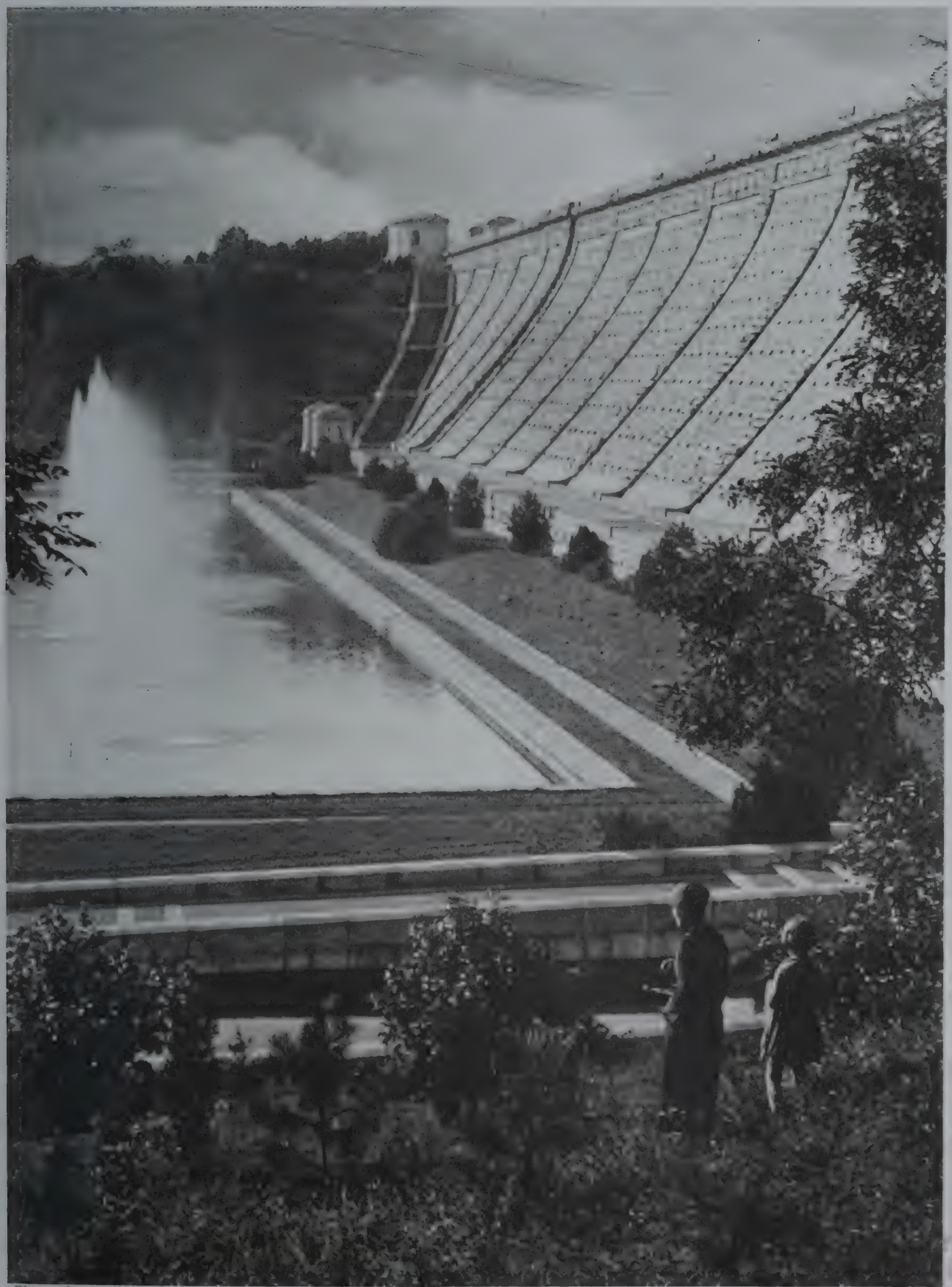
was necessary that these joints should appear on the surface of the dam. It was determined, therefore, that there should be a definite terraced base in the design, an adequate crowning motif to head the wall, a single regular curve of its surface, and that this surface should be divided into panels expressing the construction of each block of the structure in separate units; that there should be a variation in the character of the surface in order to give it variety, scale and texture; that the wall should be flanked at its top and bottom with buildings having balustrades, thus referring the whole mass to human scale; that the ends should be symmetrical, the terrace being carried in some form up the slope of the buttressing hills; and that there should be, parallel with the terrace at the foot of the dam, a pool of great length, provided with water jets which can be played whenever the supply affords waste water; and, last, that the foreground of the dam should be so laid out as to give not only a good view of the structure from a distance but also to provide interesting points of view from as many other nearer positions as was possible.

Long Pool at Base, Kensico Dam, New York
York & Sawyer, Consulting Architects

A quarry near the east end of the Kensico Dam furnished an unlimited quantity of granite of extraordinary variety, color and texture, and it was possible to get out blocks as large as could be conveniently handled. Some of these weighed 30 tons, and a few stones in the rusticated "straps," which extend vertically at each expansion joint the whole height of the face and which divide the wall into panels, are 15 feet long and have projections beyond the wall of over 4 feet and an equally deep bed. The crowning motif of the wall is a half-round moulding 5 feet high, and below it there is a frieze of alternating shields and garlands some 7 feet in height. As it would have been unjustifiably costly to carve these, and as they were intended to "read" at distances of from a hundred yards to a mile, they were so designed as to be cut with an ordinary ¾-inch rock drill and a surfacing machine, and while incredibly crude at close range, they have proved to be in keeping with the ruggedness of the surface treatment and the enormous scale of the structure. Each panel between the terrace and the frieze, flanked by two of the vertical "straps," is about 65 feet wide and 130 feet high. It is surrounded by a plain 5-foot band, referred to by the workmen as the "sidewalk," and inside this the surface is a random ashlar, irregularly rock faced. It seemed desirable to give this surface still further interest, and one of the architects, going abroad at the time, saw in a dam in the south of France, the "Devil's Bridge" in the Alps, and in the Pont du Gard, the great value of projecting "headers" to add interest to such a surface. This idea was adopted, and use was made of projecting stones, those at the bottom of a panel being square and having a projection of about 14 inches, the projection diminishing to 10 inches in the upper course. These, alternately spaced, form a diaper pattern over the whole field of each panel. The whole thing had to be determined as a result of the study of a single experimental panel, about 30 feet square, which was built north of the dam site and is now submerged in the lake. This showed a section of "strap" with the plain band and a very small area of the corner of a panel, with its border and field texture. To base upon this alone the scale and texture of a wall 130 feet high and over 1800 feet long, was of course taking a very long chance. In the panel the variations looked impossibly wild, and it speaks well for the courage of the engineers and the confidence of the Board that they were willing to adopt such a design from so small a sample.

A 30-foot, brick-paved road runs along the top of the dam, and it is illuminated at night by lights placed in flush boxes on the inside of the parapet wall, since it was considered undesirable to have any projections above the parapet, such as a file of lamp posts, which would have broken its line when seen from below.

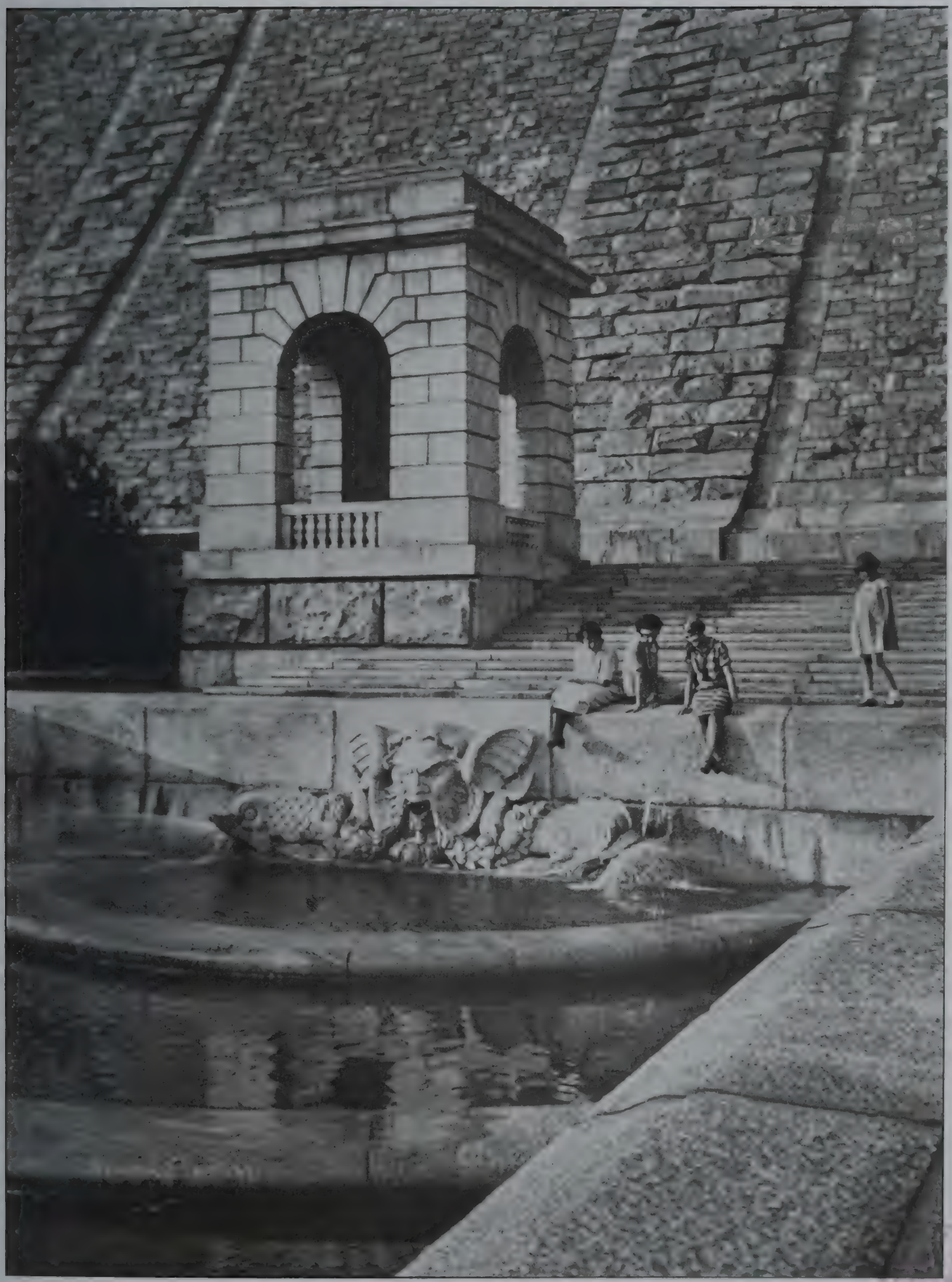
This entire project, originally designed and estimated in three months, was built for less than the approved cost of $165,000,000 and in less time than was predetermined. All honor to the chief engineer, Waldo Smith, to the consulting engineer, and to the Board who put it through and who, beyond all justifiable expectation, found that in so vast an undertaking some small contribution might be made by architects. We may well take heart when we note the success of this project, thus briefly described, and it is hoped that it will serve as an excellent example for other municipalities considering water works.



Photos, Sigurd Fischer

KENSICO DAM, NEW YORK

YORK & SAWYER, CONSULTING ARCHITECTS



PAVILION AT BASE, KENSICO DAM, NEW YORK
YORK & SAWYER, CONSULTING ARCHITECTS

ROADWAY OVER KENSICO DAM, NEW YORK
YORK & SAWYER, CONSULTING ARCHITECTS

Photos. Burgert Bros.

INTERIOR, MAIN FLOOR

CITY WATER WORKS, TAMPA

LUDLOW & PEABODY, ARCHITECTS

GENERAL VIEW

PUMPING STATION

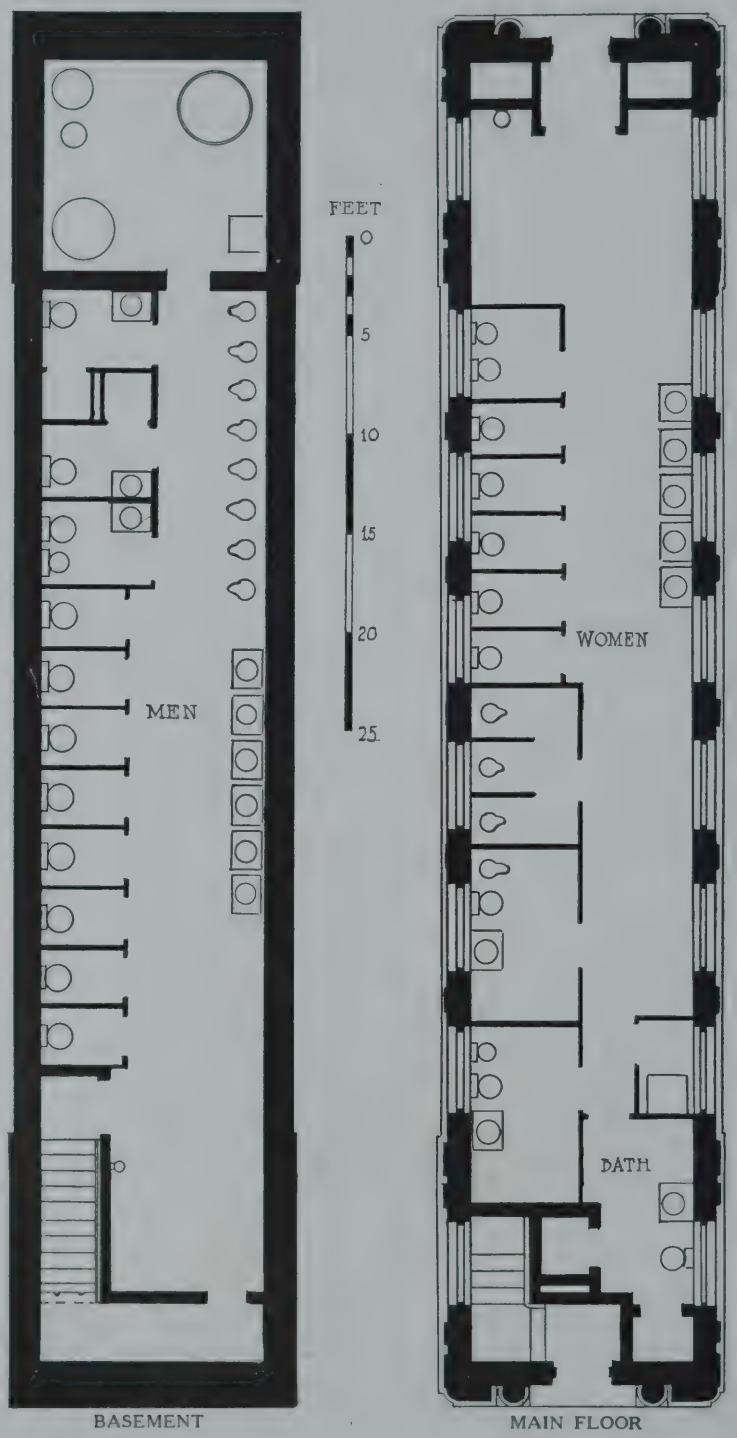
FILTER BUILDING

PARKWAY PUMPING STATION, MEMPHIS

JONES & FURBRINGER, ARCHITECTS

Plans on Back

COMFORT STATION, TRENTON, N. J.
HILL & GOLLNER, ARCHITECTS



PLANS, COMFORT STATION FOR CITY OF TRENTON, N. J.

HILL & GOLLNER, ARCHITECTS

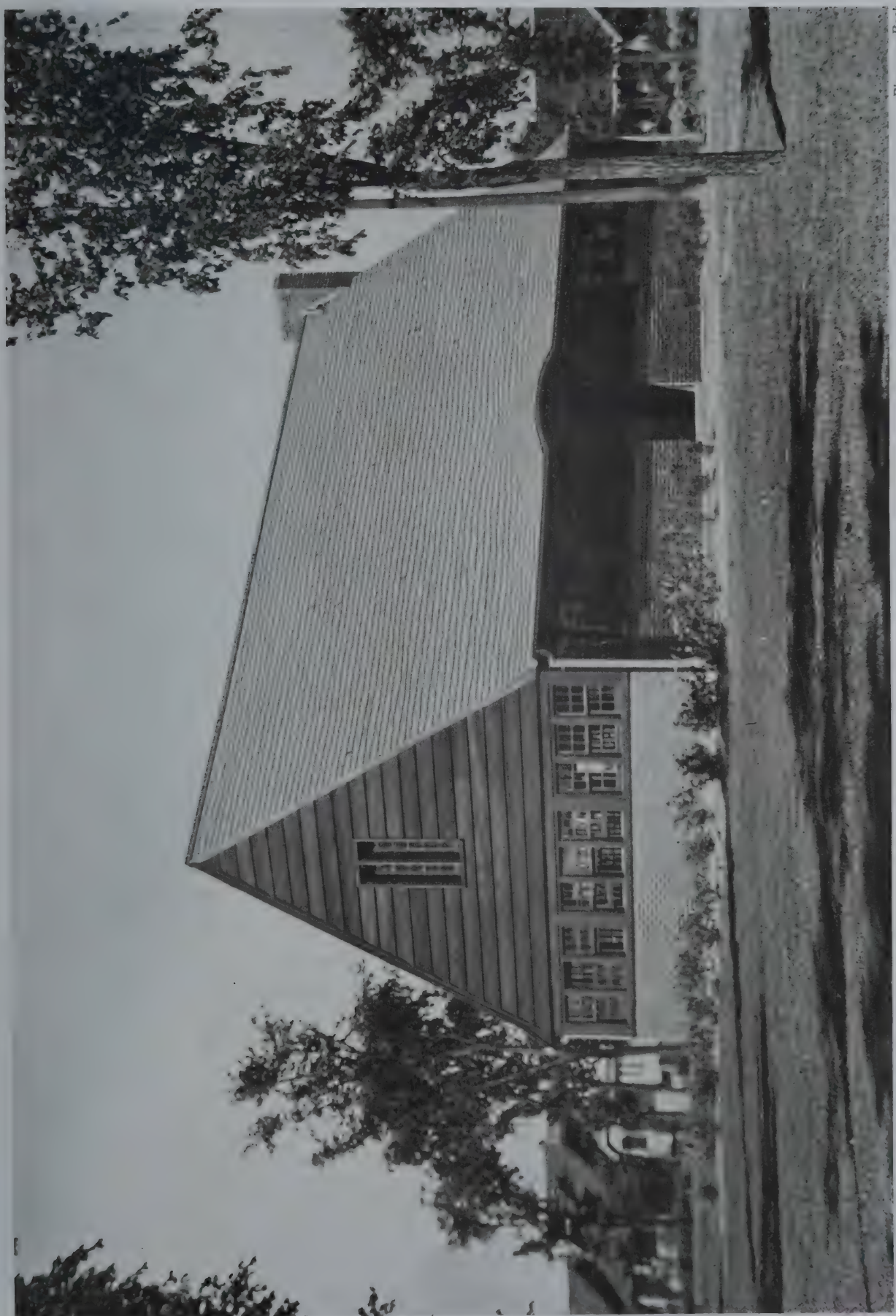
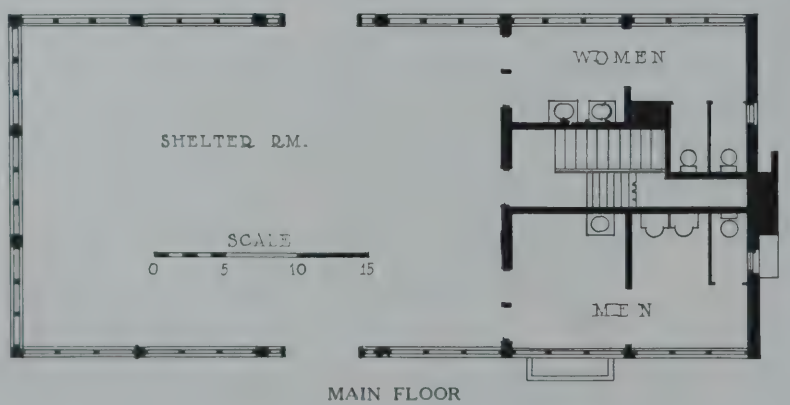


Photo. William C. Verburgt

Plans on Back

COMFORT STATION FOR CITY OF MILWAUKEE

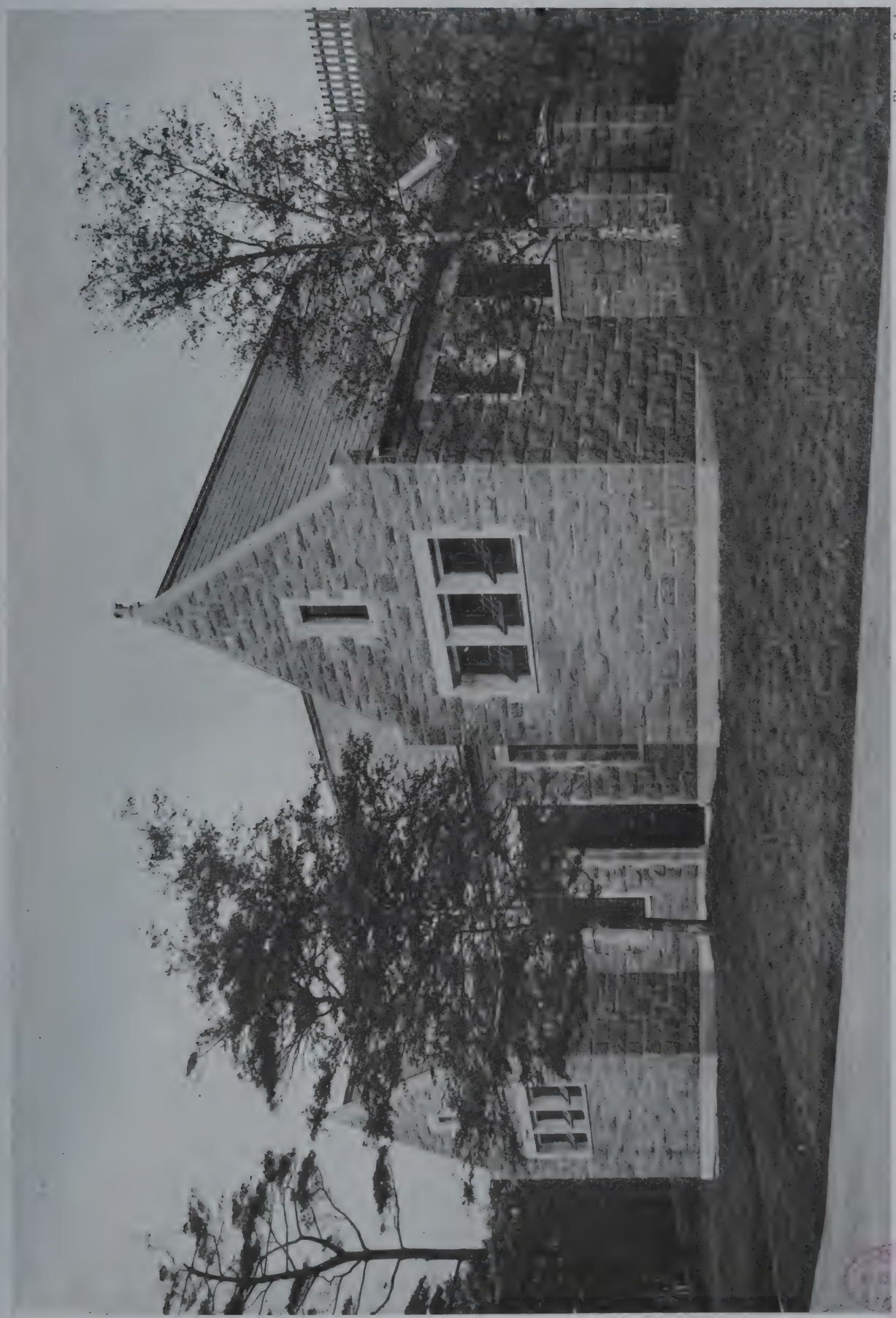
CLAS, SHEPHERD & CLAS, ARCHITECTS



MAIN FLOOR

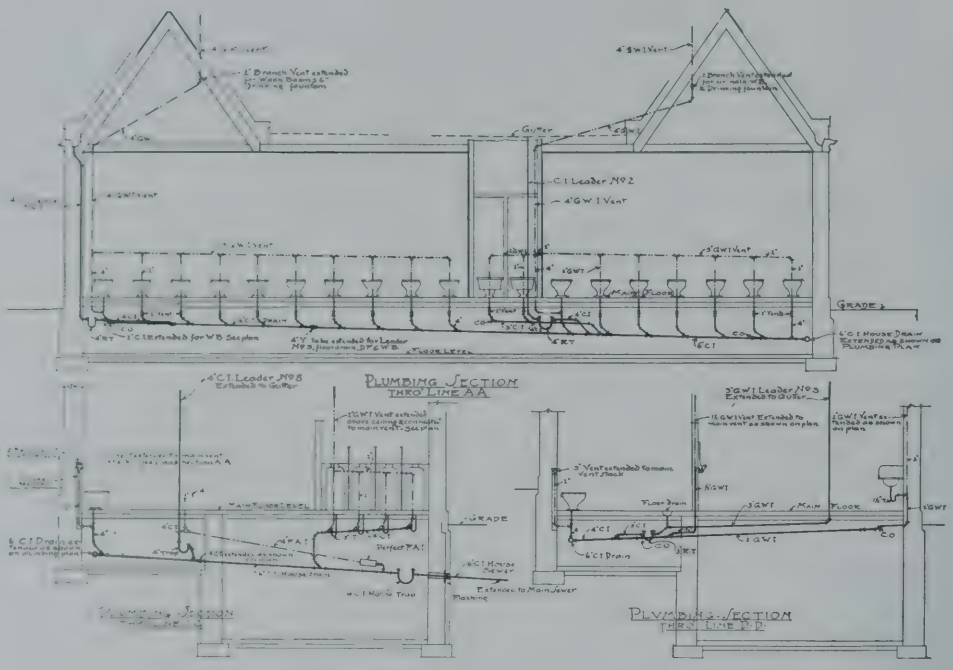
SECTION AND PLAN, COMFORT STATION FOR CITY OF MILWAUKEE

CLAS, SHEPHERD & CLAS, ARCHITECTS

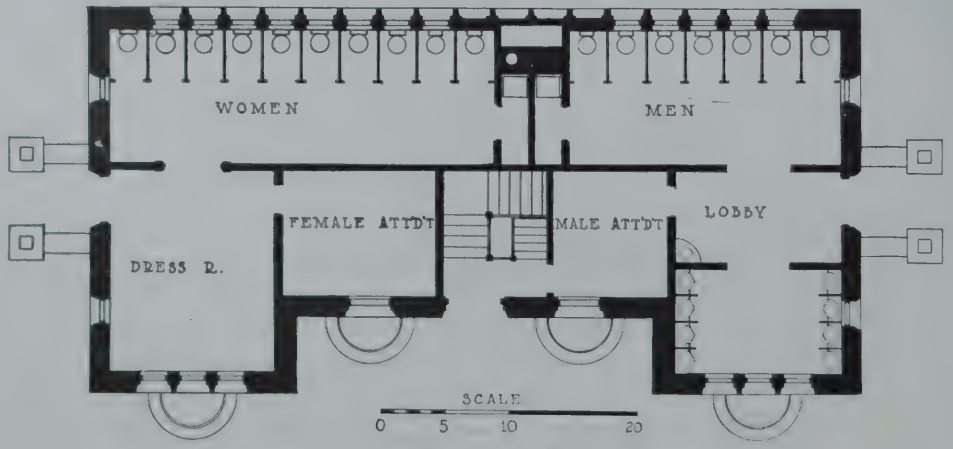


Plans on Back

COMFORT STATION, CENTRAL PARK, NEW YORK
THEODORE E. VIDETE, ARCHITECT



PLUMBING PLAN AND SECTION



MAIN FLOOR

PLANS, COMFORT STATION, CENTRAL PARK, NEW YORK

THEODORE E. VIDETE, ARCHITECT

The Public Comfort Station

By A. R. McGONEGAL

Member, American Society of Sanitary Engineers

ALTHOUGH the public comfort station, even in its simplest form, had its beginning only in the latter half of the nineteenth century, its need has been apparent from the time men began to gather in colonies greater than the merest villages and the distance and time from work to home and back again became of moment. In Biblical times, though the command to the soldier was "to go without the camp," it was realized that loss of time, danger from enemies' harries and other considerations dictated a better plan, and it became then, and still is, the first duty of a well disciplined army to construct sheltered latrines immediately on pitching camp. For the civilian population such consideration was centuries in coming. The rural dweller has his conveniences at hand, such as they may be, or he has the wide fields and the woods where nature provides both privacy and disposal. Even in small villages he is frequently near enough to home, or, knowing well his neighbors, is welcome there, but as villages become cities and cities increase in size, the matter of answering nature's calls becomes more complex, and more convenience stations must be built.

Factories provide for their workers, railroads for their passengers, office buildings for their tenants, and stores for their customers; but what of the citizen away from his home, the laborer at work, the newsboy, the policeman, the transient or holiday seeker? Time was, before there came a great change in our basic law, when the ever-present saloon especially catered to such needs of the public. It was a well recognized fact that free and comfortable toilet service drew trade, and many establishments fitted up most elaborate facilities. But the cold hand of the law drove the peripatetic citizen and the stranger alike to hotels, office buildings and depots. The maintainers of these services resent the intrusion of others than their own, and the tenant's key, the coin lock and the "Guests Only" sign are much in evidence. It is of course unfair to force a hotel man to provide for more than his guests in order to insure accommodations not already preëmpted by outsiders. It not only costs unnecessary money to install extra fixtures, but every extra fixture figures in annual repair bills, in water and supply bills, and takes up valuable space, which alone is an item of no mean importance. The answer to this pubic need is the public comfort station, built and maintained by the community, and such buildings have long been recognized as a most necessary item of city equipment. There isn't a sizeable city in the United States that is sufficiently supplied with stations of any of the various types, and many, many cities totally lack them. Even where their desirability is recognized, they are not being built fast enough to keep up with increase in traffic, and the great growth of automobile touring during late years is aggravating the situation.

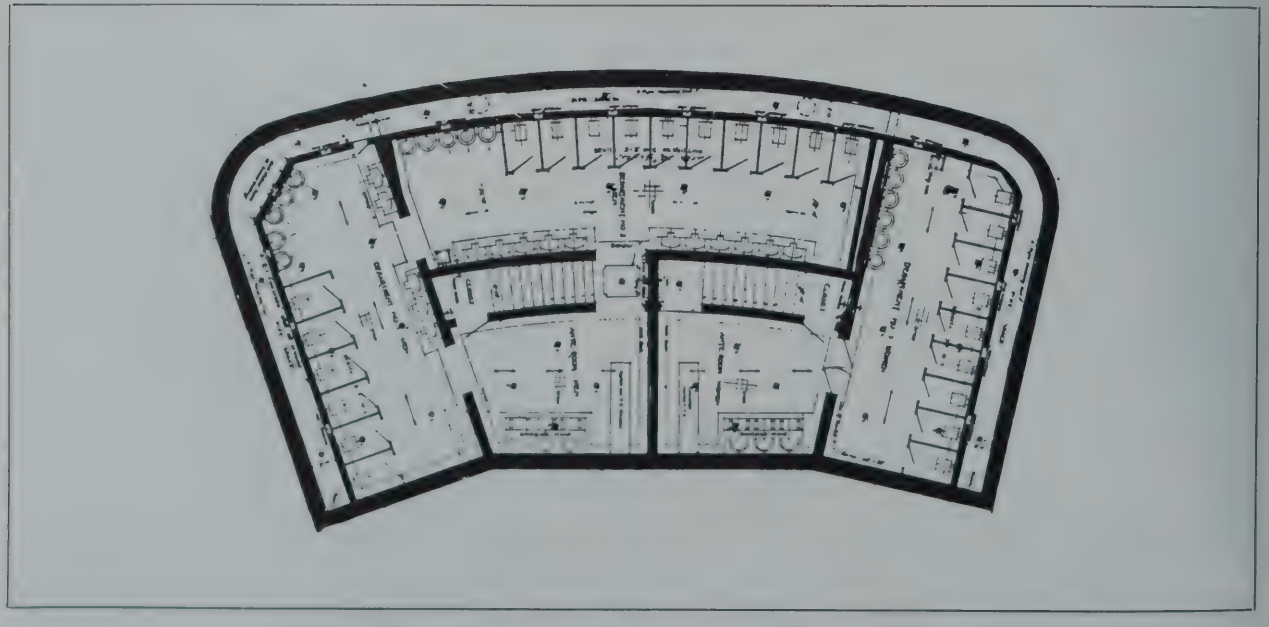
The history of the public comfort station as a building is short, both in years and in achievements. No one knows when a semi-circular niche was first cut in a wall to provide a modicum of privacy, but along about 1830, the first iron scroll, open at top and bottom and with a shallow trough in the pavement leading to the gutter, made its appearance.

Public Comfort Station, Washington

Shelter Over Entrance to Underground Comfort Station, Seattle
J. Everett, Architect

These simple urinals were used very generally in England, France and Germany, and later in this country. Some years later London constructed many quite pretentious underground stations having general toilet and lavatory service for both sexes. These indicated a need so apparent and so well satisfied that other cities in Britain and on the Continent took it up. Fine examples of these earlier stations are found in Glasgow, Edinburgh, Birmingham, Manchester and Dublin, and in London each ward or parish built its own. These were, and are still, operated generally on a small fee system and either wholly or partly pay their way. There are also exceptionally fine examples to be found in Paris, Copenhagen, Berlin, Dresden, Munich, and some other continental cities. Italy boasts a few, and there are also many wartime American-constructed stations still in use. In these European stations, however, there is not the attention paid to cleanliness and ventilation that there is in the average American station more recently built.

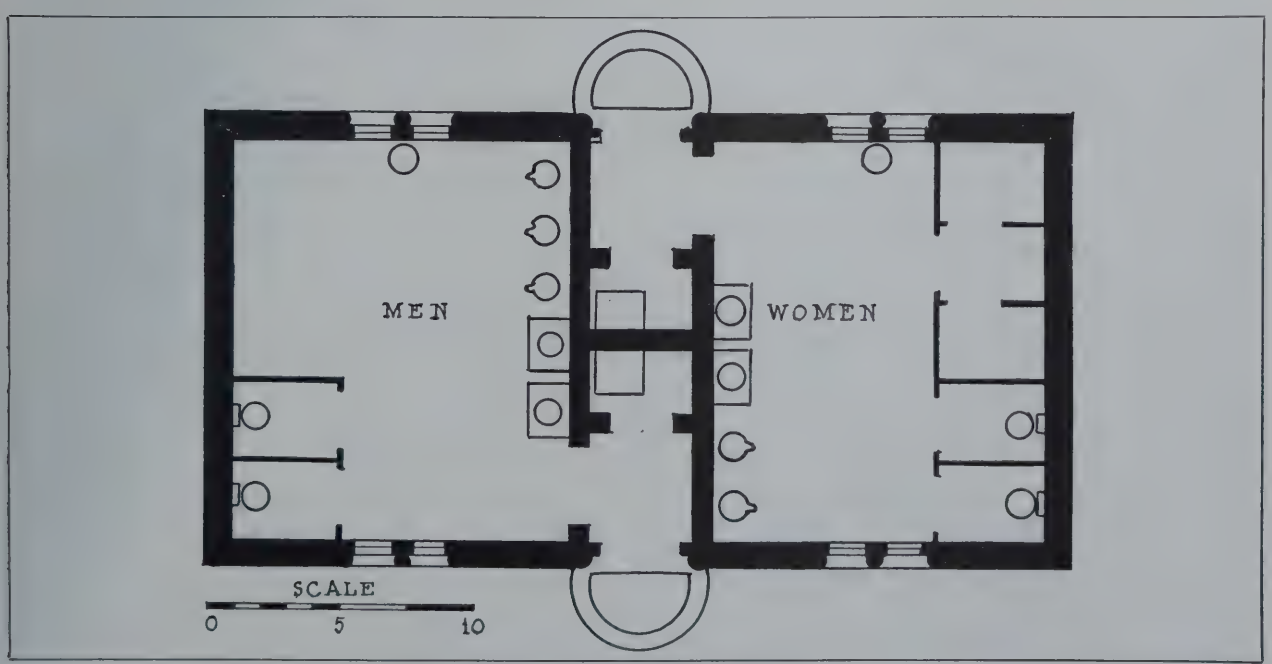
In the United States, the first public comfort station giving general toilet service for both sexes appears to have been opened in Astor Place, New York, in 1869. This was followed some years later by the



Plan, Underground Comfort Station, Seattle
J. Everett, Architect

Public Comfort Station, Trenton, N. J.
Hill & Gollner, Architects

special rooms at the Brooklyn Bridge terminals, and still later by those in stations on the Boston Common and at Worcester, Mass., all of which were well designed. The next permanent station in New York was at the City Hall; the completion of this station seemed to give impetus to many dormant projects, and substantial structures were soon under way in Brooklyn, Washington, Baltimore, Cleveland, Cincinnati, Detroit, and very generally in the larger New England cities. Still later Chicago, St. Louis and the Pacific Coast followed suit. New York, Brooklyn and Chicago are fairly well equipped, as their regular stations are augmented by the many subway and elevated railway station toilets, which are open to the non-riding public, but no other American city has made any serious impression on actual public comfort station requirements. Washington, the sightseeing and convention city, has four with one being built and another projected, instead of the 20 needed, and Baltimore has three instead of the 30 needed, and so on through the list. The foregoing references are to the major type of public comfort station,—the "business center station,"—and while this business center station is the type most neces-



Plan, Public Comfort Station, Trenton, N. J.
Hill & Gollner, Architects

sary and what is generally meant when the subject is under discussion, there are several other types also necessary in a well ordered city to meet various needs.

There is the "main artery station," not built in the business district but on the outskirts of the city on its main automobile travel route, to act as a "first and last chance" for the motoring public. Such buildings should be provided with caretakers, and be in all general arrangements and appointments the same as a major station at a business center except in point of size and number of accommodations. In lieu of salary, male attendants could operate small cigar stores rent free, with the toilets in the rear, and women small notion stores, care being taken that the stores do not dwarf the primary purpose, either by making this architecturally apparent or by the use of the International Public Comfort Station sign. Where zoning regulations are in force, a city may free itself of this obligation by requiring that sufficient and proper accommodations be provided by gasolene filling stations suitably located, retaining some supervision over the operation and care of them. Another type is the "market station," usually a special building provided for the market employes and the country people having stands, but with sufficient capacity to care for the general public in the neighborhood. The public toilets in city halls or other government buildings come under this class, the accommodation of the general public being a secondary consideration, the primary purpose being to care for the needs of those who have specific business at the markets or other buildings. Such toilets are cared for by the caretakers of the utilities of which they are adjuncts, and are not usually under the supervision of the officers in charge of comfort stations, though they should be. Playground toilets in individual buildings are fairly common in most large cities, but they are rarely used by the adult public. Toilet buildings in public parks are more plentiful than any other type of comfort station building. There are few cities of any size having public parks which are not equipped in this respect. They are generally roughly supervised by the park employes, who may enter them for this purpose two or three times daily, though they should be, in the interest of the public, constantly attended. With park stations, the service they render, the proportion between the sexes, the freedom of space for building purposes and other considerations all vary from the rather set conditions under which a major station is likely to be located and maintained.

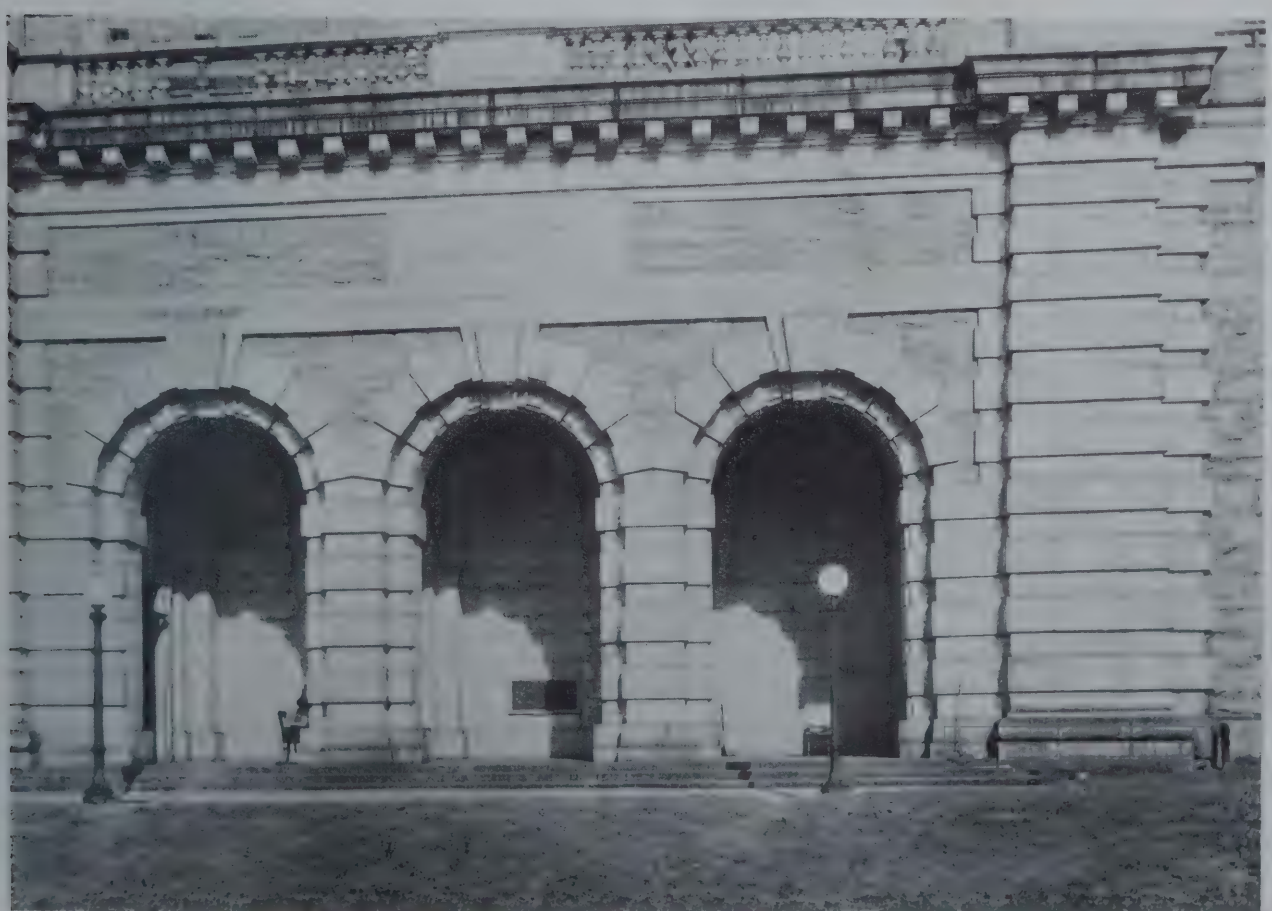
When the construction of a business center public comfort station is undertaken, the most important consideration is its location so that it shall be of maximum service to the people. Such a location will always be found at a street intersection, and it will be the busiest corner in the section under consideration. The corners will be occupied by stores

Public Comfort Station, Washington Bridge, New York

commanding high rentals, space behind the building line will be at a premium, and the only suitable place will be found underground, as it cannot be built in the street itself to obstruct traffic. Its value as a public utility will be doubtful if placed down a side street or in space rented in an adjacent building. It should be a structure to itself, right at the busy place, and its purpose should be patent to the stranger as well as to the citizen. By providing a thoroughly waterproof envelope around the building,—top, bottom and sides,—an underground building can be kept dry, and with adequate fan chambers and apparatus, fresh air can be drawn in at one end and exhausted at the other. The best existing stations have air circulation systems changing the air in the main rooms 20 or more times each hour. With this rapid circulation, the exhaust air carries no perceptible odor, as the ratio of street air dilution is great enough to prevent odors from ever being a cause for complaint.

A logical construction would be to build the station as a concrete monolith from curb to curb under the roadway, with entrances for men on one sidewalk and for women on the other. Where existing construction interferes with a complete underground street crossing, the building could be built partly under one sidewalk and partly under the roadway, with entrances at opposite ends of the structure. These entrances could be of ornamental iron similar to a subway kiosk with vent registers in the side away from the stairway or in the top. Plain ventilators, vault lights with their condensation nuisance, or any other variation from the plan of a watertight and, so far as possible, air-tight box served with an adequate fan system, should be avoided. A slight pressure should be maintained, and the fans should be operated every minute the station is in use. A suitable heating plant for wholly indirect heating and capable of keeping pace with the ventilation system must be provided, excepting in the far South.

The size of the building will of course depend on the number of accommodations provided, but it should be as compact as may be possible. The nearer the design approaches a square in plan, the less will be the cost of construction per unit of space. As to the number of fixtures and the proportions of the station, there is a wide difference of treatment in existing stations. It is self-evident that the capacity should be sufficient to accommodate the average peak load during the morning and evening rush hours, but it must be remembered that the "re-use" capacity of fixtures is very great, and that every unnecessary fixture not only adds to the size and cost of the building but affects the upkeep cost through repairs, supplies, and heating and ventilating the excess space. Except perhaps in the largest cities at their busiest intersections, a "ten-unit" station will usually answer all needs. A "unit" is one free water closet stall on the men's side, and all other fixture propor-



Public Comfort Station, Riverside Drive, New York
F. Stewart Williams, Architect

Women's Room, Public Comfort Station, Trenton, N. J.
Hill & Gollner, Architects

tions are based on that. A study made some years ago from actual observations in several cities is the basis for these deductions and averages: a urinal stall is used 12 times while a closet on the men's side is used once, and only five men in every hundred use a closet; so it follows that, in a ten-unit station, there would be ten free closets and 16 urinals for men. In one station 15 per cent of the users were women, and as they use closets only, the proper number for the female side is six free closets. There seems to be a tendency to provide too large a number of wash basins. Two on each side would generally be found ample, and in no case during the study were more than three found in use at the same time. Economy of space and future repair costs should indicate use of the minimum number.

The matter of adding pay compartments must be worked out in each case, consideration being given to the neighborhood and class of prospective users, their home habits, scale of wages commanded, and freedom with which they spend their money, and the fee to be charged. The usual fee in vogue is five cents, although many charge ten. In general, it will be found that private toilets will pay a considerable portion of maintenance costs if the compartments are large enough to contain a closet and basin with comfort and are kept clean and inviting. Some method of accounting must be adopted for assurance that the money from fees reaches the proper office, and hand collection with a street care fare register has been found good, although coin locks are probably more satisfactory. There are several makes, and one or two have been found reliable. One compartment on the women's side should have a "mother and child" arrangement with an added infants' closet with a bowl 9 inches high; or special detachable infants' seats can be hung up in the compartment.

Public Comfort Station, Trenton, N. J.
Hill & Gollner, Architects

Provision of a rest compartment for the temporary use of any person taken ill on the street can be made if desirable. Half the number of free closets seems a desirable ratio for the pay compartments, although the tendency in the most recently built stations is to increase this proportion. One station has an innovation in a shower compartment and dressing room on the men's side for a 25-cent fee, and reports have it that travelers make much use of it in the summer.

The selection of the plumbing fixtures for a comfort station is very important and has a most distinct bearing on the future cost of upkeep. Pick out the very best and most substantial. Siphon jet floor outlet closets with extended lips should be used, and a special pattern having the siphon limb arranged to pass a 2½- or 2⅝-inch wooden ball will eliminate constant taking up to clear stoppages. People have a most reprehensible habit of dropping things in closet bowls, so the bowls should be so designed that any article passing through the trap entrances will pass entirely through. Old clothes, soiled underwear, tobacco cans, pipes, pencils and like articles easily obstruct an ordinary closet bowl of the commercial pattern. It costs several dollars every time a closet bowl is taken up for a clearing, and three or four dollars added to the original cost of each bowl will assure future immunity from much repair expense. The best is the cheapest in the long run.

Seats should be acid- and wear-proof, preferably some of the black or dark colored composition seats made with open fronts, and the flush should be accomplished under pressure, either with a seat action pressure tank, or by a flush valve of the diaphragm type. In any event, the valve must be arranged for operation either by the closet seat or by a foot- or elbow-operating device, to prevent transmission of disease by means of hand contact. Urinal flushing can

Men's Room, Public Comfort Station, Trenton, N. J.
Hill & Gollner, Architects

Public Comfort Station, Detroit
Harry S. Angell, Architect

be accomplished by using slate stalls with overflow constant flush urinals, or if porcelain stalls are used with flush valves they should have foot or elbow operation. All urinals are hard to keep clean, but the best types seem to be slate constant-flushing stalls or the free-standing pedestal china urinals with floor outlets, as they fully protect the floor from soiling.

Wash basins should have rubber plugs, and it would be well to avoid using the mechanism incident to pop-up or standing wastes; basin cocks should be self-closing, and together with all other metalwork in the station, should be the same metal all through, such as polished red brass, white brass, nickel or special corrosion and wear-resisting finishes now available. Nickel plating, even the best, wears off in a few months with the constant use to which fixtures in a comfort station are put. Having care that the sewer system is so laid out that there will be ample wash, the sizes must be large enough to pass any article that might get through the closet or other openings. Water supply pipes must be amply large to provide volume for all the fixtures in operation at the same time. A public toilet with poor water supply cannot be kept clean. For the same reason that the fixtures have foot or elbow operation, the toilet-paper holders should have no operating knobs; the paper only should be handled, and the folded type of package paper will be found most satisfactory. The wall and floor finish must be [illegible]ble rather than ornamental, so colored rough-[illegible]ed cement floors and glazed brick or terrazzo [illegible] will be found most suitable. The best closet enclosure material seems to be the steel unit enclosure work made for the purpose. Wood doors or enclosure work have no place in such a structure. It might be economy in the long run to have the makers of the steel enclosure units furnish them in heavy sheet copper and have the main doors and trim copper-covered to obviate the possibility of rust.

It goes without saying that a public comfort station must be kept scrupulously clean, and it is only through the agency of plenty of hot water, soap, powder and hard work that this can be done. Don't make the mistake of putting a drain in the floor so the attendant can wash out with a hose. It takes a heavy mop and "elbow grease" to get the scum off the floor and walls. Deodorizing apparatus should never be used to kill one odor with another. Closet seats must have frequent washings with a suitable insecticide, and the insides and under rims of closet bowls must be kept white by liberal use of powders made for that purpose. Uniformed attendants should be on duty at all hours, and in addition to keeping the station in a high state of cleanliness they might have directories, sell paper towels and cheap combs, and the women attendants should have needles and thread or pins for the asking and should sell sanitary napkins. Each station might have pay telephones, and the attendants might be allowed to check parcels. If there is room, a concession should be given a bootblack, or else automatic shoe-brushing machines should be installed. Arranging for advertising panels inside the station brings some revenue, but notices of quack doctors and patent medicines should be barred. It is best to omit all advertising.

The proper designing of a public comfort station is a matter of specialty engineering, and architects should make the most careful study of the entire problem from the standpoint of utility and service. The first stations built developed errors in proportions and in sizes, and in many other ways they were found unsuitable for satisfactory operation. Later examples improved on the original designs until today those designed by specialists are sure in every detail of giving long and satisfactory service at least cost to the public. It is time the average American city realizes that public comfort stations are a necessity, and that their provision and maintenance have a distinct moral and economic bearing on the life of the city as well as on public health and public comfort.

Rest Room and Comfort Station, Milwaukee
Clas, Shepherd & Clas, Architects

F.O.

THE ARCHITECTURAL FORUM

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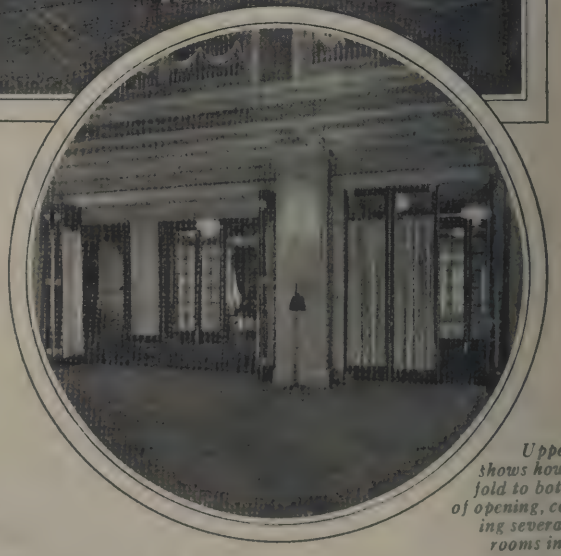

Upper view shows how doors fold to both sides of opening, converting several small rooms into one.

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BOOK DEPARTMENT

French Architecture of the Simpler Sort

A Review by WALTER F. WHEELER

THE more elaborate of the French types of architecture and interior decoration have never been widely popular in America, their use being confined chiefly to those great houses on Fifth Avenue which are now rapidly disappearing before the onslaughts of resourceful real estate operators and builders of tall commercial structures, ably backed by house wrecking companies. There exists, however, another type of French architecture, wholly charming and adapted in an unusual degree to American taste and present-day requirements, which for one reason or another has never become widely known in the United States. This is the type exemplified by the smaller and simpler town houses and the minor country houses and chateaux, the French equivalent, probably, of the English manor house; the homes of the lesser nobility or aristocracy, prosperous country magnates, and even the more opulent of the merchant class, always influential in France.

The great possibilities which lie inherent in a work upon this subject have been made the most of by the co-authors of this volume which deals with the minor homes of a most important part of France, built during that great and prosperous period beginning with the brilliant reign of Louis XIV and ending with the downfall of Napoleon I. "As commonly conceived, Versailles is the palace and the palace is Versailles. In a measure this is true. But it is not wholly true. The royal residence, to be sure, has always been of such dominating importance that it has overshadowed all else in the vicinity. The palace and its immediate dependencies, however, have not occupied the whole of the stage. What many people forget is that there is also a city of Versailles, and the city of Versailles is partly made up of the dwellings of personages who were attached to the French court. However jealously these courtiers retained their rights to the lodgings assigned them under the royal roof, they nevertheless sought relief from the oppressive pomp and circumstance of palace life in dwellings of their own where they might be absolute masters and mistresses of their domestic affairs. The

"CHURCH BUILDING"—*By Ralph Adams Cram*

(A NEW AND REVISED EDITION)

THE improvement which has accompanied the progress of American architecture during recent years has been no more marked in any department than in that of an ecclesiastical nature. This has been due primarily to the rise of a few architects who by travel and study have acquired much of the point of view from which worked the builders of the beautiful structures which during the fourteenth century and the fifteenth were being built over all of Europe.

These architects have closely studied the churches, chapels, convents and other similar buildings in England, France, Spain and elsewhere, and the result has been a number of American churches of an excellence so marked that they have influenced ecclesiastical architecture in general and have led a distinct advance toward a vastly better standard. This improvement has not been exclusively in the matter of design, for plans of older buildings have been adapted to present-day needs, and old forms have been applied to purposes which are wholly new.

THE appearance of a new and revised edition of a work which is by far the best in its field records this progress. Mr. Cram, being perhaps the leader among the architects who have led this advance, is himself the one individual best qualified to write regarding the betterment of ecclesiastical architecture. The editions of this work of 1900 and 1914, which have for some time been out of print, have now been considerably revised and much entirely new matter has been added, which in view of the change which has come over ecclesiastical building of every nature is both significant and helpful.

Illustrations used in this new edition of "Church Building" show the best of recent work—views of churches and chapels large and small, in town and country, buildings rich in material and design and others plain to the point of severity, with the sole ornament in the use of fine proportions and correct lines. Part of the work deals with the accessories of the churches and their worship.

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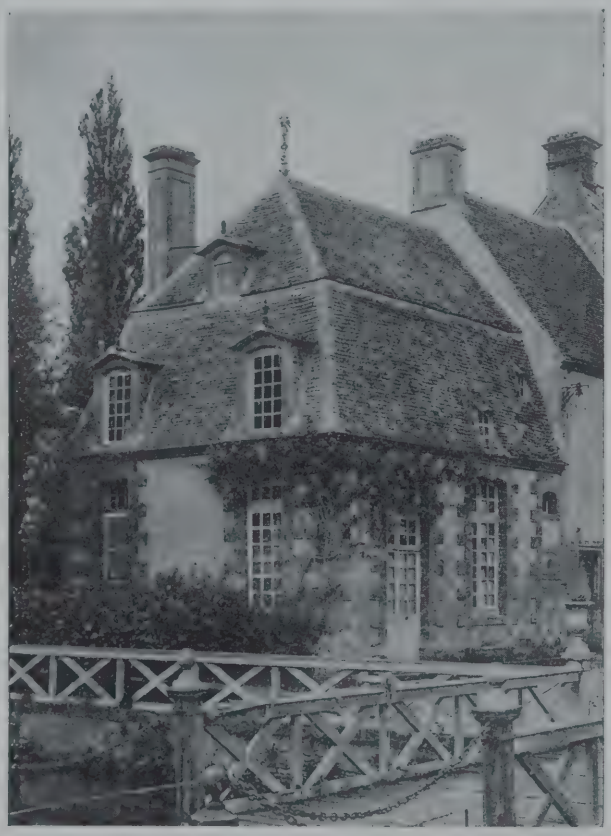
FRENCH PROVINCIAL ARCHITECTURE

A Constructive and Practical Work on Minor French Buildings

By PHILIP LIPPINCOTT GOODWIN and HENRY OOTHOUT MILLIKEN



SOME of the most graceful and distinguished architecture in the world exists in French provincial towns, small villages and in tiny hamlets which cluster about the great chateaux—small manors, half-timber cottages, shops and buildings of other kinds. Much of this wealth of design is applicable to American use—the exteriors largely for suburban or country houses, and the interiors for residences or apartments. The authors, with unerring architectural taste and judgment, have selected just those details which possess proportions and suitability for present-day use. The volume contains illustrations, plans and measured drawings worth considerably more than the cost of the work.

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type of house developed in response to this demand on the part of the seventeenth and eighteenth century court circle is virtually unique and has no exact parallel elsewhere in France. The houses, for the most part, are modest in size, elegant though simple in all their appointments, and completely in contrast with their owners' great estates in the country or their hotels in Paris. In other words, the type is the embodiment of charming simplicity, and it is applicable, with but little modification, to the present requirements of a large and growing portion of the American public." It is a most practical type.

This volume contains more than 250 illustrations, plans, and measured details of houses in or near Versailles. The plans of French houses of any period have not always a very practical value for use in America, but the illustrations of the exteriors and interiors of the buildings themselves are likely to create fresh enthusiasm in even the most jaded among those concerned with architecture, interior decoration and the disposition of gardens and exterior areas, for they exhibit that slight degree of formality, the refined balance and the well bred simplicity which characterize the best current work.

THE SMALLER HOUSES AND GARDENS OF VERSAILLES, 1680-1815. By Leigh French, Jr., and Harold Donaldson Eberlein. 202 pp., 8¾ x 11¾ ins. Price, $6. The Pencil Points Press, 419 Fourth Avenue, New York.

THE PRACTICAL DECORATION OF FURNITURE, Volume III. By H. P. Shapland. 15 pp. of text, and 48 plates, 8½ x 11 ins. Price $5. Payson & Clarke, Ltd., New York.

IN this, the third volume of a work dealing with different forms of furniture adornment, attention is given to applied metalwork, lacquer, use of textiles, and to such other forms of decoration as overlaying with ivory and precious metals, veneering with tortoise shell, use of gesso, composition, and plaques of Sevres or Wedgewood. Like the earlier volumes, it is replete with illustrations of furniture displaying many forms of decoration, the illustrations being of pieces of furniture in the principal museums as well as from great private collections.

ANTIQUES. By Sarah M. Lockwood, 160 pp., 8 x 9¾ ins. Price $3.50 Net. Doubleday, Page & Co., New York.

INTEREST in the collecting of antiques, and particularly of American antiques, has resulted in the building up of writings upon the subject the extent of which is astonishing. This interest, it is now to be seen, was first aroused about the period of the Centennial in 1876. Then for the first time it was realized that the furnishings and accessories of our colonial and post-colonial periods were both interesting and valuable, and those sufficiently astute to foresee the extent to which this interest would go no doubt found collecting extremely easy, with the garrets and attics of all America to explore. Very different it is today, when one sees at an auction the most primitive and uncompromising old pine settle or stretcher table being fought for by the very wealthy and finally bid in at a figure which would have made rich the early carpenter who probably made it. This particular volume, while not in any sense a primer on the subject, might be called a kind of "first aid" to the collector. Arranged alphabetically, it considers under B such pieces as Beds and Bureaux, under C such headings as Chippendale, Chairs, etc., while under M it takes up Mirrors and Mounts. Excellent illustrations are used.

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An Authoritative Work on

"THE GREEK REVIVAL"

By HOWARD MAJOR

THE search for effective types of architecture for domestic use leads logically to the re-discovery of the style known as the "Greek Revival." In the hands of a few particularly skillful architects it is being used with marked success, their use being based largely upon study of such examples as have survived the period, just prior to the Civil War, when use of the type was widespread throughout the United States. It is an entirely American style, founded not upon a following of current English architecture but upon a study by Americans of classic types adapted to domestic uses.

Mr. Major's excellent work is the result of a careful study of the style as it was interpreted in the North and East, and particularly in the South. The illustrations of exteriors and interiors are full of suggestions for anyone seeking a variety of architecture bold, simple and effective, which supplies a fitting background for life in America. The book is richly illustrated, and shows existing work, large as well as small, in both city and country.

236 Pages; 7⅛ x 10¾ inches. Price $15

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THE BOOK OF LITTLE HOUSES. Edited by Lucy Embury Hubbell. 128 pp., 9½ x 12½ ins. Price $3. Doubleday, Page & Co.

FEW aspire to live in a mansion; in fact, the servant problem is making the mansion unpopular, and the pressure of present high prices is driving it from the landscape. In the city it is under the wrecker's hand. It is being changed into apartments or offices or else swept away altogether by the great masses of steel and concrete which a high powered civilization is constantly crashing against it. In the country it still stands, here and there, a tribute to unusual wealth, but there, too, the servant problem is making it less and less popular. Hence the great house is gradually disappearing from both city and country landscape, along with other relics of an older and more leisurely age. But everyone aspires, and justly should, to live in a house of his own, designed exactly to suit his needs and to fulfill his ideals of a home. "Oh to have a little house! To own the hearth and stool and all!" sang Padraic Colum, the Irish poet, voicing the deep-seated urge that tugs at the heart of everyone, especially at the hearts of those who each month give proof of their vassal-ship by rent paid to an overlord. But the only house to which the average man may aspire today is one that shall not make too heavy demands on either one's physical or financial resources.

This has given rise to the popularity of the "little" house, the smaller home of from four to eight or nine rooms, where comfort is not entirely dependent on servants, nor one's income swallowed whole by the coal bill. To design houses to meet these needs, which bring both beauty and dignity within limits of space and income, is the problem of the present-day architect. To help meet the architectural exigencies of these times has come the "Book of Little Houses" edited by Lucy Embury Hubbell, Associate Editor of *The Garden & Home Builder*. It contains 400 illustrations and plans of successful little houses, which have been assembled from Doubleday, Page & Company's magazines, embellished by adequate descriptions and illuminating magazine articles. It thus brings to hand in one volume what the editor calls the "cream" of present-day small country house design. "Everyone loves to mull over plans, to dream dreams of the house to be built, or to figure out ways of perfecting the house already owned," says the editor in her preface. In this respect the volume is truly a dream book for the prospective home builder, with suggestions as to how with a moderate income he may attain his ideals. Involving as it does the services of some 75 architects and landscape architects, many of them leaders in their professions, the book speaks with authority as well as with entertainment and charm. "Dignity is not the prerogative of the large house alone. Sometimes it is achieved in the small dwelling by careful choice of materials and planning. Just because a house is small is no reason why it should lack character. It may be beautiful, amply proportioned and convey a sense of pleasant repose." Formality, on the other hand, is not so easy to achieve, but because this is a less formal age, it becomes a minor requisite. "The keynote of the small house is, quite naturally, informality, because small houses have always been the cottages of unsophisticated people who had neither the financial nor architectural resources to build in formal styles. But the situation today is different from that of a few generations ago, and while the small

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house in America may or may not be formal and sophisticated, it is a long remove from the cottage of the peasant, and its ideal is invariably one that combines a highly developed standard of living conditions with an attractive architectural and generally consistent appearance."

The desirability of building now to meet actual needs, instead of waiting for developments, is stressed by Henry H. Saylor in an article entitled "In a Little House Built for Two." A man, he says, "may postpone so long the building of the house of which he has dreamed, that by the time he can build his desires have so altered that the problem must be thought out all over again. He struggles along through the busiest part of his life accepting all the inconveniences and handicaps of a misfit house; then, when he feels rich enough to build what he wants, he is too old to get from his house what it should bring him. Better to build now for immediate needs, altering the house to meet new conditions as they come." The house, it is stressed in another article, should be carefully fitted to its site. Uneven contours, such as those achieved by building on the side of a hill, often contribute much to its beauty and individuality, and the better to link the dwelling to its surroundings, the prospective home builder is advised to set aside a specific sum for the planting part of the operation. "In arranging your budget for building, allow for your garden," says Walter McQuade, in an article entitled "Investments in Beauty that Pay in Cash." "Ivy does not hide the architect's mistakes, though it certainly does embellish his efforts. Planting adds an air of mellowness to the house. Show me the small or medium-sized house, no matter how carefully designed, that is really a finished home until the planting is at any rate well started."

HAND-MADE RUGS. By Ella Shannon Bowles. 205 pp., 5½ x 8½ ins. Price $5 Net. Little, Brown & Co., Boston.

ARCHITECTS and decorators know that for domestic interiors of the simpler types the most appropriate and successful floor coverings are those which were evolved by the people who made and used them,—home-made rugs, hooked, braided or plaited, knitted, crocheted, woven, or embroidered,—and interiors arranged in the farmhouse or provincial English or French styles or in what Americans are fond of calling the "Colonial" are rendered more interesting and are given strengthened character when simple and somewhat primitive coverings are used upon the floors. This helpful volume seems likely to stimulate the appreciation of handmade rugs of the kinds evolved in America, and no doubt to stimulate also their making. The author goes quite fully into the subject, describes the different types of rugs, their patterns, materials and methods by which they are made. No work upon the subject, it is believed, deals quite so fully with the important matter of dyes, which must of course be used to produce the best results. There are given here many old recipes or formulæ for dye making which one feels sure are the outcome of much experiment upon the part of earnest weavers of rugs. For the encouragement of those who may be interested in the making of home-made rugs, the author lists a number of books and illustrated articles on the subject.

The Practical Book of Tapestry

By George Leland Hunter

THE intimate connection between tapestry and architecture as well as the frequent use of architectural motifs in tapestry design gives to tapestry and its history an interest to architects which is strong. Primarily associated with the Gothic age, which saw what were perhaps the most brilliant of its triumphs, tapestry has been identified with the development of all of western Europe and with the different periods —the Renaissance, early and late; the Baroque age; the eras of the different Louis; and in later days with the various places where looms have been set up and where present-day workers are engaged in creating by use of old-time methods those marvelous weaves which add to any surroundings where they are placed a richness of decoration which confers dignity and splendor to the place where they are used. No study is more absorbing than that of tapestry.

IN this volume is given a complete review of the subject of tapestry. The author has made a deep study of tapestry's history and is familiar with every important example in the world. The volume deals also with the technique of tapestry weaving, the changes and development of its design in different countries at different times, and it goes at length into descriptions of modern looms where this ancient art has been successfully revived. The illustrations, many in full color, add to the reader's interest. All are from photographs made especially for this work, and many show the student for the first time examples of tapestry weaving of the first importance. The volume is particularly valuable by reason of its accurate documentation and full bibliography and because of its giving the names of places where there are to be seen the most important tapestries now in existence.

Richly illustrated in half-tone and full color. 302 pages; 6½ x 8¾ inches. Price $10.

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The ARCHITECTURAL FORUM

VOLUME XLVII — *Established 1892* — NUMBER 4

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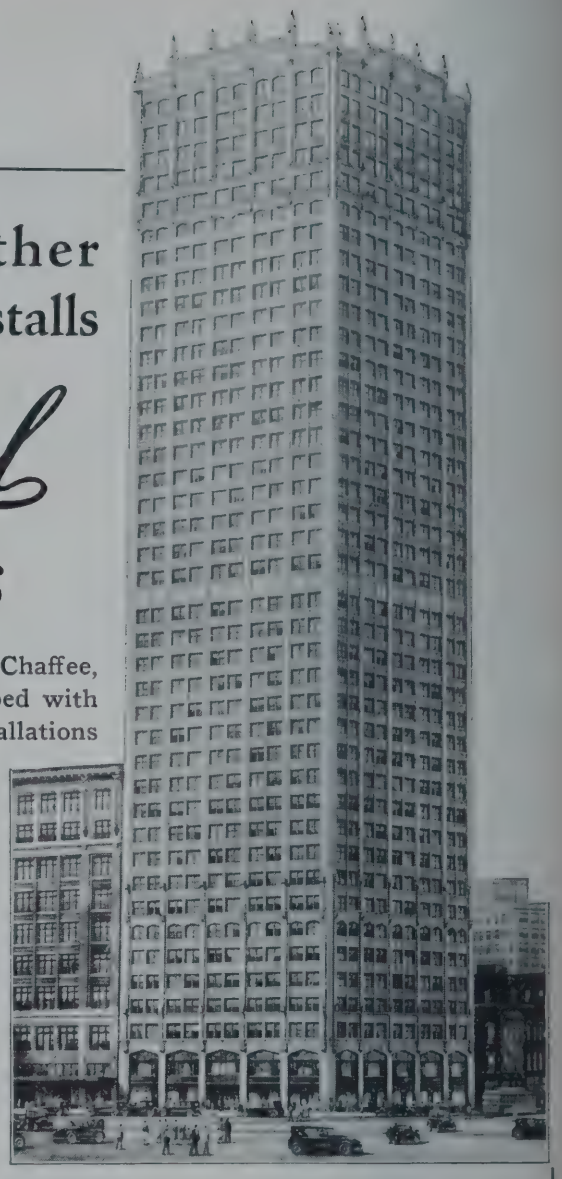

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THE EDITOR'S FORUM

A. I. A. CODE OF ETHICS

THERE has lately been made public the new Code of Ethics which was adopted not long ago by the American Institute of Architects. The Institute's Committee on Ethics, of which Abram Garfield is Chairman, prepared the code which was made public by Milton B. Medary, Jr. of Philadelphia, President of the Institute. The basic principles of practice by architects are thus summarized:

The profession of architecture calls for men of the highest integrity, business capacity and artistic ability. The architect is entrusted with financial undertakings in which his honesty of purpose must be above suspicion; he acts as professional adviser to his client, and his advice must be absolutely disinterested; he is charged with the exercise of judicial functions as between client and contractors and must act with entire impartiality; he has moral responsibilities to his professional associates and subordinates; finally, he is engaged in a profession which carries with it grave responsibility to the entire public.

These duties and responsibilities cannot be properly discharged unless his motives, conduct and ability are such as to command respect and confidence.

These nine canons of advice make up the code:

The relation of the architect to his client is one depending upon good faith. An architect will explain the conditional character of estimates made before final drawings and specifications are complete, and will not by careless statements mislead a client as to the probable cost of a building. If the architect guarantees an estimate he becomes legally responsible, and he should not make any guarantee which affects in any respect the quality of his advice.

The contractor depends upon the architect to guard his interests as well as those of the client. An architect will condemn workmanship and materials which are not in conformity with the contract documents, but it is also his duty to give every reasonable aid toward a more complete understanding of these documents so that mistakes may be avoided. He will not call upon a contractor to make good oversights and errors made in the contract documents.

An exchange of information between architects and those who supply and handle building materials is encouraged and commended, but the use of the free engineering service which is offered by manufacturers and jobbers of building materials, appliances and equipment is accompanied by an obligation which may become detrimental to the best interest of the owner, and may easily become embarrassing.

The American Institute of Architects has set forth a schedule or guide by which the proper professional charges may be determined. The architect's charges for his professional service shall be made to the client only, and he will not receive commissions, fees, gifts, favors, or any substantial service from a contractor, or from any interested person other than the client. He will not knowingly compete with a fellow architect on a basis of charges.

An architect in his investments and in his business relations outside of his profession must be free from financial or personal interests which tend to weaken or discredit his standing as an unprejudiced and honest adviser, free to act in his client's best interests.

An architect will not advertise for the purpose of self-laudatory publicity, but publicity of standards, aims and progress of the profession is to be recommended. He will not take part or give any assistance in obtaining advertisements or other support toward meeting the expense of any publication illustrating his work, in behalf of which he may be approached.

An architect may introduce to a possible client the service which he is able to perform, but will not, except under unusual circumstances, offer to continue this service without compensation until it has been approved and definitely accepted by the client.

An architect will not falsely or maliciously injure, directly or indirectly, the professional reputation, prospects or business of a fellow architect. He will not attempt to supplant another architect after definite steps have been taken by a client toward his employment; nor will he undertake a commission for which another has been previously employed until he has determined that the original relation has been fairly terminated and the original architect relieved.

An architect will take no part in a competition which does not include the provisions which experience has found to be necessary if the interests of the owner as well as the architect are to be safeguarded.

The principles were drafted by a committee on which the 57 chapters of the A. I. A. were represented.

MEETING OF PRODUCERS' COUNCIL

THE Fourth Semi-Annual Meeting of the Producers' Council, affiliated with the American Institute of Architects, will be held at the Detroit-Leland Hotel, Detroit, on October 19, 20 and 21, 1927.

With the adoption of the report of the Board of Directors of the Institute at the last annual meeting, with reference to the Producers' Council, this organization is now forging ahead rapidly on a constructive program, and it is expected that this meeting will be of much interest, not only to the members of the Council, but to architects in general. A number of prominent architects will address the meetings on points of mutual interest. Members of the Institute are invited to attend the sessions. It is expected that there will be a golf match between architects and producers, which should prove interesting.

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FROM A DRAWING BY FRITZ STEFFINS

The Architectural Forum

The
ARCHITECTURAL
FORUM

Volume XLVII OCTOBER 1927 Number 4

Harvard Graduate School of Business Administration

McKIM, MEAD & WHITE, Architects

By CHARLES W. KILLAM

THE buildings for the Graduate School of Business Administration, Harvard University, were developed in accordance with the definite idea that business men are to take a larger share in that leadership in the community which has been in the past so much in the hands of the learned professions, and that if they are thus to lead, their training must include more than a narrow technical course in some specialty of business. Being a graduate school, its students have had the advantages of cultural courses before entrance, but the School attempts to continue this humanizing process so that its graduates will have a background broader than what is required simply to earn money, that they may know how to enjoy and use money, ability, and power. It was believed that buildings and grounds could and should help in this education, that personality could be developed in an atmosphere of quiet, good taste appropriate to an old university, and that it was important to this end that the School should provide living quarters for all of its unmarried students and for many of its unmarried professors and instructors, so that students might be broadened outside the classroom as well as within by contact with their classmates and with the instructors and younger professors.

The Graduate School had been established in 1908, and had been growing so rapidly in the early 'twenties that its accommodations in scattered rooms of several different buildings had become entirely unsatisfactory, and the growing University needed even these scattered rooms. Nor could the School influence its students in all the ways desired in such quarters. It was difficult to develop a school spirit without a school home. As a first step toward obtaining money for such a home, Dean Donham had studies made to discover, as far as practicable in those early days of the School, what was needed in the way of buildings, so as to be able to show sketch plans of buildings to possible donors and to give some idea of what the cost would be. It is interesting now to look back over the development of the School's ideals as reflected in the sketches which have been made. The first studies, made in 1920, made no provision whatever for dormitories, and arranged all the activities of the School,—classrooms, library, administration, and business research,—in one building. Later, three buildings were found to be necessary, but still no dormitories were provided for. By the time that gifts were asked, however, the need of dormitories as an important part of the social and cultural equipment of the School had come to be appreciated, and sketches prepared at that time included them as well as six other separate buildings for various purposes.

When gifts were solicited it was not expected that the $5,000,000 needed would be given by one man, but the University was fortunate enough to receive the entire sum from George F. Baker, of New York. Mr. Baker's gift was accepted, and the words "George F. Baker Foundation" were added to the name of the School. Mr. Baker suggested that an architect should be chosen by competition. Dean Wallace B. Donham of the School arranged with the writer to serve as Professional Adviser, and there was arranged a competition somewhat unusual in that certain details were studied out and issued to the competitors in the program. The method of investigating the qualifications of the competitors was also unusual. In preparation for the competition a fresh examination of the growing needs and ideals of the School led to the inclusion of these specific buildings in the scheme, to be obtained at once, if possible, or else in the future, when more funds would be available,—administration, classrooms, dining hall and clubs, dormitories, library, recreation, business research and professors' houses, all found necessary.

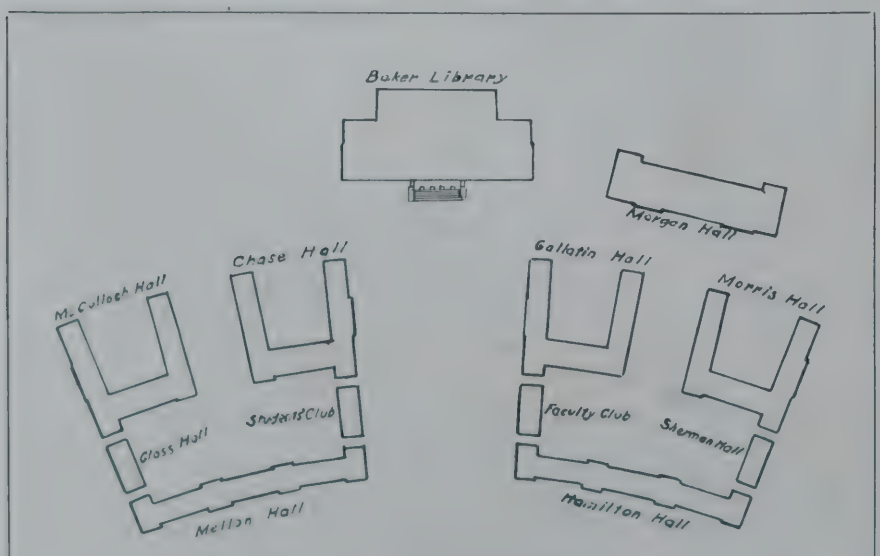
The University owns large areas on the south side of the Charles River, in Boston, divided from the Freshman Dormitories in Cambridge only by the narrow river. Soldiers' Field, containing the stadium and other athletic buildings, is on the western side of North Harvard Street, which divides this Boston portion of the University lands, and the Business School group is on the eastern side, opposite the stadium, and in the area between North Harvard Street and the Charles River Parkway, about one-third of a mile from Harvard Square and the "yard." The land was low and flat, with very few trees which could be saved. The Metropolitan District Commission controls the parkways on both sides of the river, but the portion in front of the area to be used for the

Photo. Air Service of New England, Inc.

Air View, Harvard Graduate School of Business Administration

School had not been developed. The proposed park drive made a short cut across the bend in the river in front of the University land, leaving a wider park between the drive and the river than is provided along the rest of the river front. It was seen that land at this point would be much more useful to the University than to the Commission in the form of an unnecessarily wide park, and that it would be mutually advantageous to have the park drive follow the bank of the river more closely and for the Commission to sell to the University an area of about seven acres thus saved. This was readily arranged.

Before issuing the program, the Dean, the Professional Adviser, and a draftsman spent the time from July 1 to September 13, 1924 in a detailed study of the requirements, and prepared drawings which were issued in the program. They consulted frequently with President Lowell, of Harvard, who takes a very active interest in all building operations of the University. These preliminary drawings were considered helpful, not only to crystallize the ideas of the University authorities but also to simplify the work of the competitors and to give a basis for starting the working drawings. It was appreciated that economical building was necessary, particularly of the dormitories, because it was desirable that they should earn a better return on their cost than is usual with college dormitories without charging the students more than the normal rates in other buildings in the University. This economical planning was not, however, allowed to reduce the dormitories to repetitions of the cheapest possible unit. Fireplaces were provided in most of the studies, and the buildings were varied enough to give interest. This economy was not regretted. The School authorities believe that young men learning the principles of business in the environment of an old university should live comfortably but without luxury in buildings in good taste, not in archæological copies of either too formal or too picturesque structures of the past, to be imitated now only by inconvenient plans and expensive

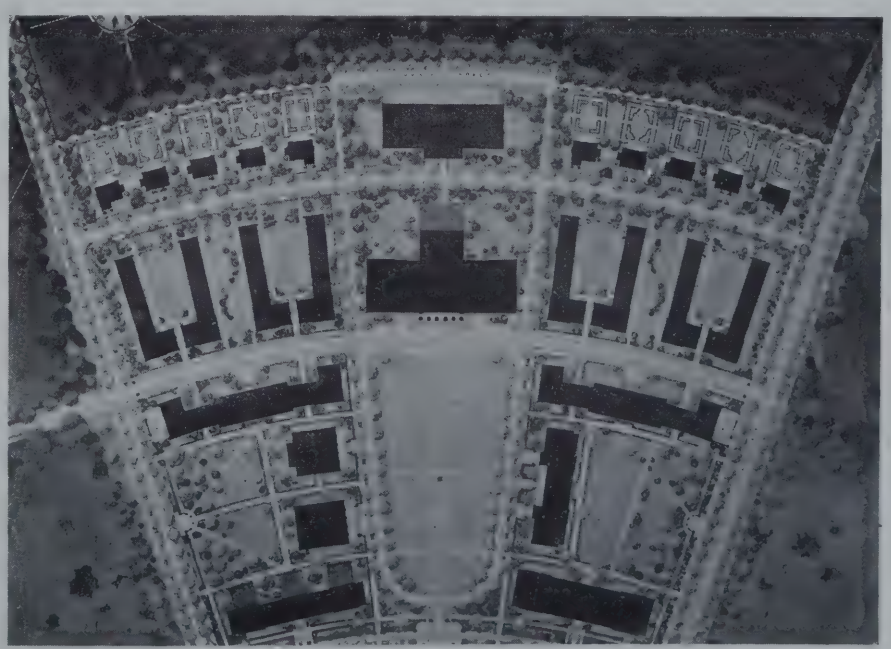


Block Plan of Group as Built

Photos. Louis H. Dreyer

Aërial Perspective, from the Competition Drawing

and unnatural ageing of new materials. The preliminary studies resulted in eight pages of drawings, which were printed in the program. These studies determined the dimensions of most of the buildings, fixed the arrangements of parts of the library, and gave six different unit plans for dormitory rooms, including two-man studies with either one- or two-man bedrooms and with both entry and corridor arrangements. The entry arrangement required less area, and the two-man studies with two-man bedrooms gave the most economical plan studied, occupying 191 square feet per man gross, including walls, stairs, and toilets. Plate 68 shows the plan for this scheme as issued in the program. It is believed to give a minimum area compatible with comfort, but the competitors were given freedom to develop better units if they wished, and of course they had to do so to assemble the units into buildings and to fit angles and ends. This unit is unusual in that each entry serves eight men per floor, and each toilet also serves eight men, but not the same men. Each pair of men in a study, therefore, meet six other men in the toilet and four other men on the stairs, the four latter men using another toilet. This amount of social contact was welcomed as being broader than the four-man contact possible when each entry serves only two two-man studies. The entrances to the studies were placed on the side walls as far back from the window walls as possible, so as to give full use of the best lighted parts of the rooms for desks and window seats. This location of the study doors required that the first floor be a half-story above the ground at the entrances, thus giving windows high enough to properly light the basement. Three lavatories are shown on this plan, but it was later decided to install four, and the double shower bath was changed to a single, so that the ratio of fixtures became one shower bath, two water closets and four lavatories to each eight men. These ratios have given satisfaction and have proved adequate during the year the dormitories have been in use.



Block Plan, Portion of Competition Drawing

Chase Hall and Future Instructors' House

The outline scheme of the Library as issued to the competitors is shown on Plate 66. This scheme was based upon the fundamental requirements, laid down by the librarian, Charles C. Eaton, that the delivery desk was to be the center about which stacks, working spaces, and reading rooms should be grouped as closely as possible. There were no requirements for memorial halls, and no desire for monumental treatment was allowed to interfere with this straightforward functioning. North light was preferred for the reading room, and this gave an opportunity to extend the stack spaces to the south, where the University owns ample land. The competitors were allowed by these preliminary studies to concentrate their attention on the grouping as a whole, and their ability to "precise" was judged by their treatment of a combined dining hall and club building with plan at 1/16 and elevation at 1/8 scale. A number of them expressed gratification at the time and labor saved them by the preliminary study which was thus afforded.

A two-stage competition was decided upon. Although the standard form of the American Institute of Architects was followed in general, some unusual provisions were introduced. The rough draft was very thoroughly examined and revised by counsel of the University. The first stage was open to all architects resident in the United States without preliminary investigation as to their qualifications and without compensation. The important provision was made, however, that such competitors in the first stage as were chosen by the jury as meriting consideration for admission to the final stage should have their qualifications investigated, and should not be admitted to the final stage unless their *business capacities, organizations, and qualifications were of such a high standard as to meet with the unqualified approval of the Treasurer of the University.* More than 200 architects expressed a desire to compete at first, but after consideration of these requirements only 65 arranged to enter the first stage, and only 49 actually sent in drawings. The first-stage competitors were given from September 13 to November 1, 1924. During the first stage the clients referred to by the 65 competitors were asked to write to the Treasurer or the Dean giving their opinions of the qualifications of the architects. This resulted in more than 300 letters from clients, as many as nine replying in the cases of some of the competitors. It was perhaps one of the most thorough investigations ever carried through covering a large number of architects. Many of the clients referred to had employed the architects under investigation on large operations. There were, of course, a few who criticized the business ability of their architects, but the outstanding and encouraging fact developed by the investigation was that a large number of architects have carried on great building operations in a business-like manner to the entire satisfaction of their clients. The judges for the first stage were Charles Francis Adams, Treasurer of the University; Wallace B. Donham, Dean of the Business School; and Charles D. Maginnis, and Charles A. Platt. The architect-members were nominated by six architects who had been previously chosen to participate in the final stage without being required to enter the first. From the first stage, the jury, on November 11, selected a group which they believed to merit admission to the final stage as far as could be judged from the competitive drawings. This part of the choice was entirely anonymous. From this group the Treasurer, by the help of letters, of references, and of photographs of executed work gathered together during the competition and, of course, without anonymity, selected to enter the final stage in addition to the six originally invited:

Aymar Embury II, New York; Hewitt & Brown, Minneapolis; Raymond M. Hood, New York; Ludlow & Peabody, New York, with Harold Field Kellogg, Boston, Associated; Benjamin W. Morris with Eric Gugler, New York, Associated; Egerton Swartwout, New York. The first stage produced some helpful suggestions which were included in the modifications of the program for the final stage, and it helped toward further crystallizing the ideas of the authorities.

The University authorities had selected these architects to compete in the final stage without participation in the first stage: Coolidge, Shepley, Bulfinch & Abbott, Boston; Professor J. J Haffner and Perry, Shaw & Hepburn, Boston, Associated; Guy Lowell, Boston; McKim, Mead & White, New York; Parker, Thomas & Rice, Boston; Walker & Gillette, New York. These firms had designed satisfactory buildings for the University, for Harvard Clubs, or for the donor, or had official connection with the School of Architecture of the University. Each unsuccessful competitor in the final stage received $2,500, and the winner received $25,000 within ten days as an initial payment on account of his fee.

For the final stage the original program was again used in the main, but with some modifications, and it was issued on November 15, 1924, the competitors being given until January 5, 1925, and the judgment was rendered on January 10. In the first stage competitors had been left free to group the buildings anywhere on the long River Parkway frontage, or on North Harvard Street, or anywhere on the large area available, provided that the area at the junction of the street and parkway was occupied. There were naturally many different solutions under this broad permission. In the final stage the field was limited because many of the first-stage competitors had disregarded the requirement of compactness. Another modification was to change the single large dining hall to two. Later consideration increased this number to six, when the working drawings were started, in the belief that the smaller rooms give an intimacy that is socially desirable as compared with that possible in a hall seating nearly 1000 men. The lack of any obvious center from which to start an axis naturally led to different arrangements. Two chose a diagonal axis from the junction of North Harvard Street and the Parkway; one plan disregarded the curve in the Parkway altogether; two plans presented buildings longwise to the curve; one plan had buildings anglewise to both the curve and North Harvard Street; some, like the winner, presented curved facades to the Parkway and facades on North Harvard Street parallel to the street. The winning scheme, by McKim, Mead & White, recognized the existence of the curve in the river by using a fan-shaped plan with a trapezoidal court on a main radial axis running nearly north and south. This court as built is about 375 feet deep, 185 feet wide at the river end, and 250 feet wide at the Library end. The Administration Building was placed nearest the junction, as was required in the program, and faces on the River Parkway as does the Research Building on the other side of the main court. Forming the sides of the court are the classrooms, auditorium, clubs, and some of the dormitories. The Library ends the axis of the main court at the wide end and faces north. The rest of the dormitory buildings are placed on either side of it. The Recreation Building was back of the Library with professors' houses on either side of it, forming the tips of the sticks of the fan toward the south. It was the simplest, most straightforward scheme that was presented, and the only scheme which could be easily recalled to memory. It recognized

Faculty Club and Dormitories

Perspective Sketch of Library, Harvard Graduate School of Business Administration

the curve in the river as do the Freshman Dormitories on the opposite bank, although this resulted in an axis based on nothing more important than a boat house and a power house on the Cambridge side of the river. It also resulted in a trapezoidal main court which widens as it extends back from the river and thus neutralizes the perspective effect by apparently shortening the court and moving the Library nearer the river. The dormitories were like two hands of four fingers each, with the openings toward the south, giving favorable lighting. The scheme gave two attractive curved roads, one in front and one at the rear of the Library. It orientated the Library in exactly the right way. It recognized the existence of North Harvard Street sufficiently. It did not open up the whole group to public inspection from the outside, but on the other hand it did have a main court with its narrow end open toward the parkways running on each side of the river in front of the group. The increasingly large number of motorists using these parkways will therefore have a chance to look up this main court and see the Library at its end, and will thus sense the use and importance of the group. The dormitory courts, on the other hand, were, as was desired, small enough and varied enough to give intimacy and privacy, and the fact that the angles were not right angles added a little pleasant informality to the extensive grouping.

The jury for the final stage of the competition consisted of Mr. Baker, the donor; President A. Lawrence Lowell; Louis Ayres; Milton B. Medary, President of the American Institute of Architects; and John Russell Pope, the three latter being chosen from nominees made by the competitors in the final stage. This stage was entirely anonymous. In the judgment the architect-members were asked to give their opinion first, and their choice met with the hearty approval of the lay members. The preparation of the program began July 1, 1924, and the winner in the final stage was announced on January 10, 1925. The preparations for the competition and the competition itself took, therefore, six months and cost more than $40,000. The University authorities believe that the time and money spent in preparation for the competition were worth while, and that the University got more nearly what it wanted and required less work of the architects than if the winning architects had been engaged in the beginning. The competition seems to have been justified.

All of the authorities of the University at present are in agreement that a school of about 1000 men is large enough to allow a satisfactory subdivision of its subjects, and that no larger number is desired. In order, however, not to bind their successors to this limit, studies were carried far enough to show that by forming the main court of the winning design with dormitories, instead of with other buildings, it would be possible to provide for a still larger School if it were ever found desirable. This was accomplished by moving the dormitories forward to the Parkway, where two of the halls could overlook the river, and by moving the Administration Building back alongside the Library. This change retained the general scheme of the winning plan except that the dormitories now form the sides of the main court. It allows future additional dormitories to extend around the easterly and northerly sides of the Library and additional classroom and research buildings to extend along North Harvard Street, thus leaving the Library and Administration Building near the center of such a possible development. The plan as built, however, has not been handicapped in any way to provide for this possible growth or for possible change.

There were several reasons for haste in finishing the buildings. It was also hoped to obtain early and cordial coöperation from the contractor, and it was therefore decided to enter into a cost-plus-fixed-fee contract. It was appreciated that this method made

Photos. Paul J. Weber

Library, Harvard Graduate School of Business Administration

it difficult to determine even the approximate cost, because there was no time to await final sketches of all of the buildings. It was felt that some buildings could be omitted from the program if necessary as the costs became known, and that since work could be started more promptly with this form of contract, the buildings could be occupied one academic year earlier, thereby, for one thing, earning about $100,000 from the dormitory rentals during that period.

As the land was in part a dump, several feet below the desired finished grade, arrangements were at once made with Boston and Cambridge for dumping, as it was not considered feasible to dredge fill from this narrow part of the river as had been done some years before on the area now occupied by the Massachusetts Institute of Technology. Most of the University buildings in Cambridge are heated from a power house of the Boston Elevated Railway on the Cambridge side of the river, directly on the axis of the new group. The problem of heating the University as a whole was reviewed in this connection, for its buildings in Cambridge and in this part of Boston extend for a greatest length of over a mile. It was considered whether the extent of Harvard's holdings in Boston would warrant a separate power house, a part of which should be built for this group and additions made as the University built on the vacant area. It was finally decided to bring the steam from the Boston Elevated Railway power house across the river. The pipes could not be carried on the Anderson Bridge, and a tunnel under the river would be very expensive. From the first the School authorities had hoped to maintain close relations with the rest of the University, and it was soon seen that another bridge, down-river from the Anderson Bridge, would help in this respect. When the matter of piping arose, therefore, it was seen that such a new bridge could carry the pipes and also serve as another desirable physical connection with the undergraduate portion of the University. It would, of course, be particularly appropriate if it could serve as a memorial to a business man who had conspicuously served his country. Friends and business associates of the late John W. Weeks gave the money for such a bridge, about $230,000. He was a graduate of Annapolis and had become a successful banker who, in his later years, had served his city, state, and country with distinction as mayor, congressman, and senator. A three-arch foot bridge, 25 feet wide, of concrete faced with brick and limestone, was built somewhat east of the river frontage of the Business School group and gives a second means of approach to Widener Library and the Harvard Union of the main college group. McKim, Mead & White designed the bridge. Its authorization required consent and approval of federal, state, and city authorities. The engineering design and supervision were by the Metropolitan District Commission, in whose care the bridge was placed by successive transfers from the donors to the University, and then to the State of Massachusetts, this the necessary procedure.

On June 2, 1925, the first steam shovel went to work, although working plans were only partly developed at that time. In September and October, 1926, about 16 months later, some 750 students moved into five of the halls. The Library was used in part on March 7, 1927, and the Administration Building in the summer of 1927. Such was the progress made.

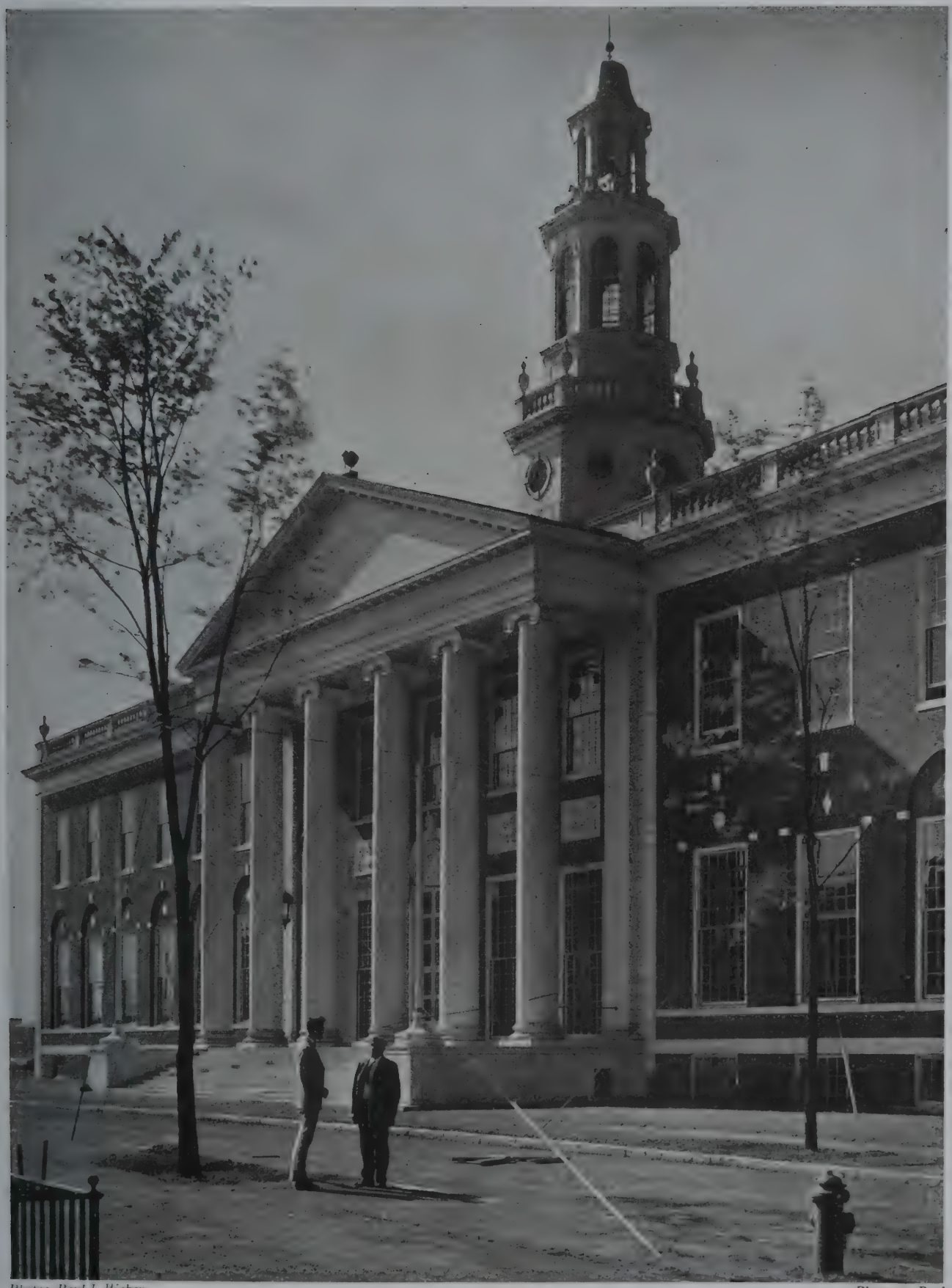
As finally built, a dining room was provided in each of the six dormitory halls in order to gain the advantage of the intimacy of a room seating about 100 instead of three times that number. This change complicated the dormitory construction and increased the cost of service, because, while one kitchen was retained, six different serving rooms were required for the students, one for the Faculty Club, one for clerical employes, and one for kitchen employes. There is, in addition, an all-night lunch counter for

the students. The kitchen in the basement of McCulloch Hall, the most easterly of the dormitory units, had be to connected by basement passages or by tunnels under the courts with all of these dining rooms, the farthest, Hamilton and Morris Halls, being about 800 feet away. Mechanical conveyors for the food were investigated and believed to be practicable, but were not installed, although passages and tunnels are built large enough to allow their future installation. All the kitchen service rooms and passages had to be separated from the passages and rooms given up to the housekeeping service, as it has been found impossible to maintain control if there is any connection between them. This complicated the basement plans. Other departures from the competition plans were to provide for the clubs in separate low buildings forming part of the dormitory group, and to substitute houses for unmarried instructors for the professors' houses originally called for. These instructors' houses were inserted as small buildings in the dormitory groups. The houses are completed only to the first floor levels at present in the case of the open ends of McCulloch, Chase, Gallatin, and Morris Halls, the four U-shaped halls, but will be carried up like the others when the need arises. Connecting arcades are also planned for the future, so that eventually the dormitory courts will be surrounded by arcades one story high, instructors' houses or clubs two and one-half stories high, and the main dormitories three and one-half stories high. The subdivision of the dormitory area into six halls and the provision of an instructors' house with each hall give great flexibility, so that it will be feasible, if ever found desirable, to have an effective tutorial system or some such grouping as that obtaining in the colleges in an English university. Each of the six halls has a two-story dining room, but no common room or lounge. The School authorities felt that the best kind of a lounge for each hall could be provided in the first story of the instructors' house, where the professors and instructors there in residence could easily and informally mingle with the students. In addition to these hall centers, to give a meeting place where the students from each hall can meet students from all of the other halls, the Students' Club provides not only a common lounge for the whole School but smaller rooms for reading, games, committees, and an all-night lunch counter, since such an adjunct has been found necessary.

Arch Joining Halls

A study of the dormitory plans shows that most of the suites consist of two-man studies with two-man bedrooms as worked out for the competition program as most economical. Mellon and Hamilton Halls, the long units on the Parkway, show two-man studies with one-man bedrooms, and the third floor plans of all the units show a corridor scheme, McCulloch, Chase, Gallatin, and Morris Halls having a number of one-man studies with beds. The fourth floor plans were in part in the roof and therefore had to depart from the standard arrangement of the lower floors, thus giving larger and less regular studies, with cross draft in some cases. The splayed walls of some of the dormers add greatly to their attractiveness from the inside. The University supplies the furniture in these dormitories, and each man in a typical two-man study has a desk, desk chair, easy chair, and shares a table and coat standard, and in the bedroom has a bed, pillow, mattress, chiffonier, and chair. The total cost of this equipment was about $100 per man. Bookcases and window seats are built in, and each student has a separate closet, although small and too shallow, being only 12 inches deep. The slop sink closet opening into each entry is just the size of the sink, the latter being plastered in. All doors are made as small as possible, those to studies being 32 inches, bedrooms 28 inches, and bathrooms 26 inches wide. The erection of the Recreation Building was postponed. The original program provided for a few classrooms in the Library and the remainder in a separate building, but all of them were finally put into the Library. Their use so far convinces the School authorities that it is desirable to keep them all in the Library building, extending the structure as additional stacks, reading rooms, and classrooms are found necessary. The combination gives compactness and saves the time of students, because they can conveniently use the library between classes, since they do not have to leave the building.

(Continued on page 329)

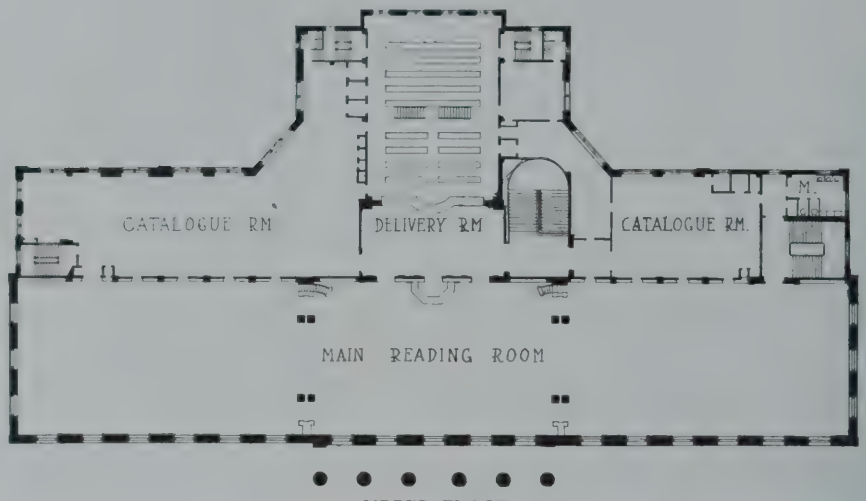


Photos. Paul J. Weber *Plans on Back*

LIBRARY

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



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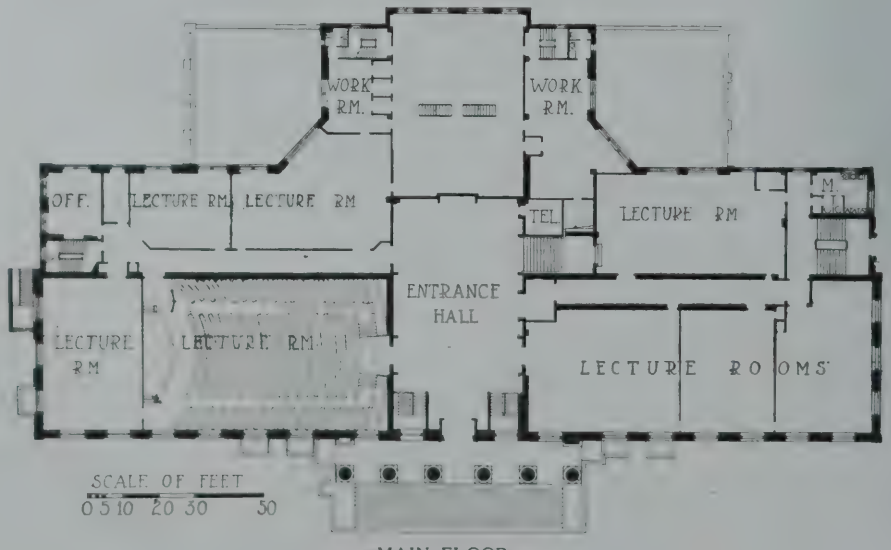


MAIN FLOOR

LIBRARY

PLANS, HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

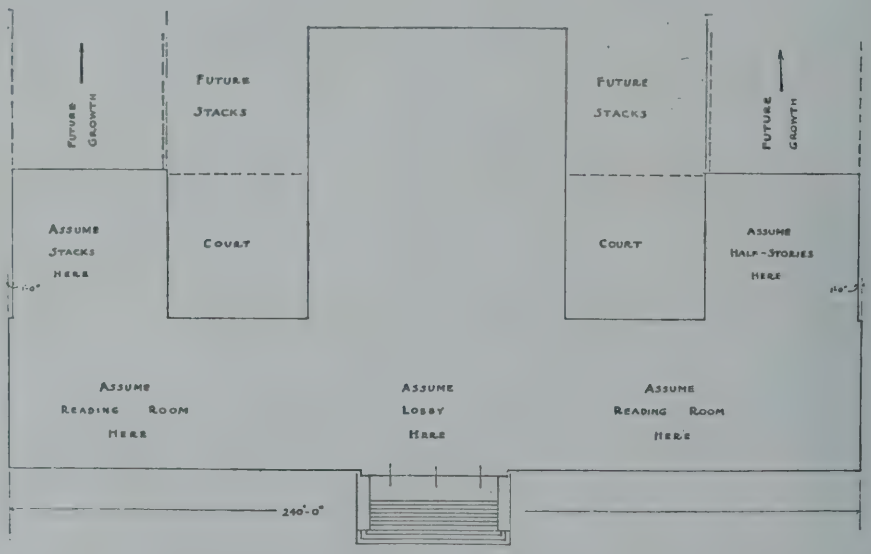
McKIM, MEAD & WHITE, ARCHITECTS

Plan on Back

LIBRARY READING ROOM

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



BLOCK PLAN OF LIBRARY, HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, AS SHOWN IN THE COMPETITION PROGRAM PREPARED BY CHARLES W. KILLAM, ARCHITECTURAL ADVISER

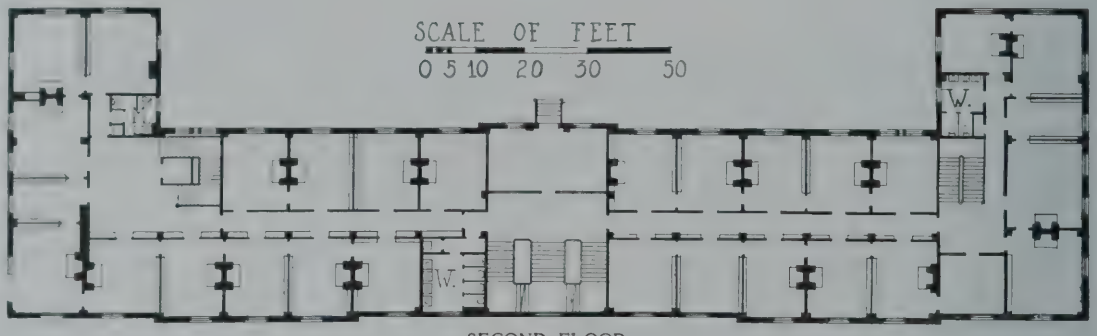
MORGAN HALL AND DORMITORIES

Plans on Back

DORMITORIES AND SHERMAN HALL

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



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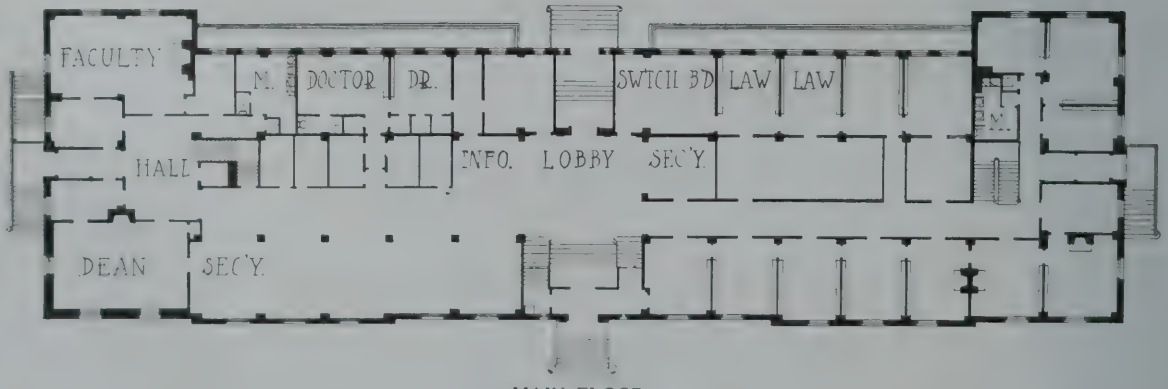
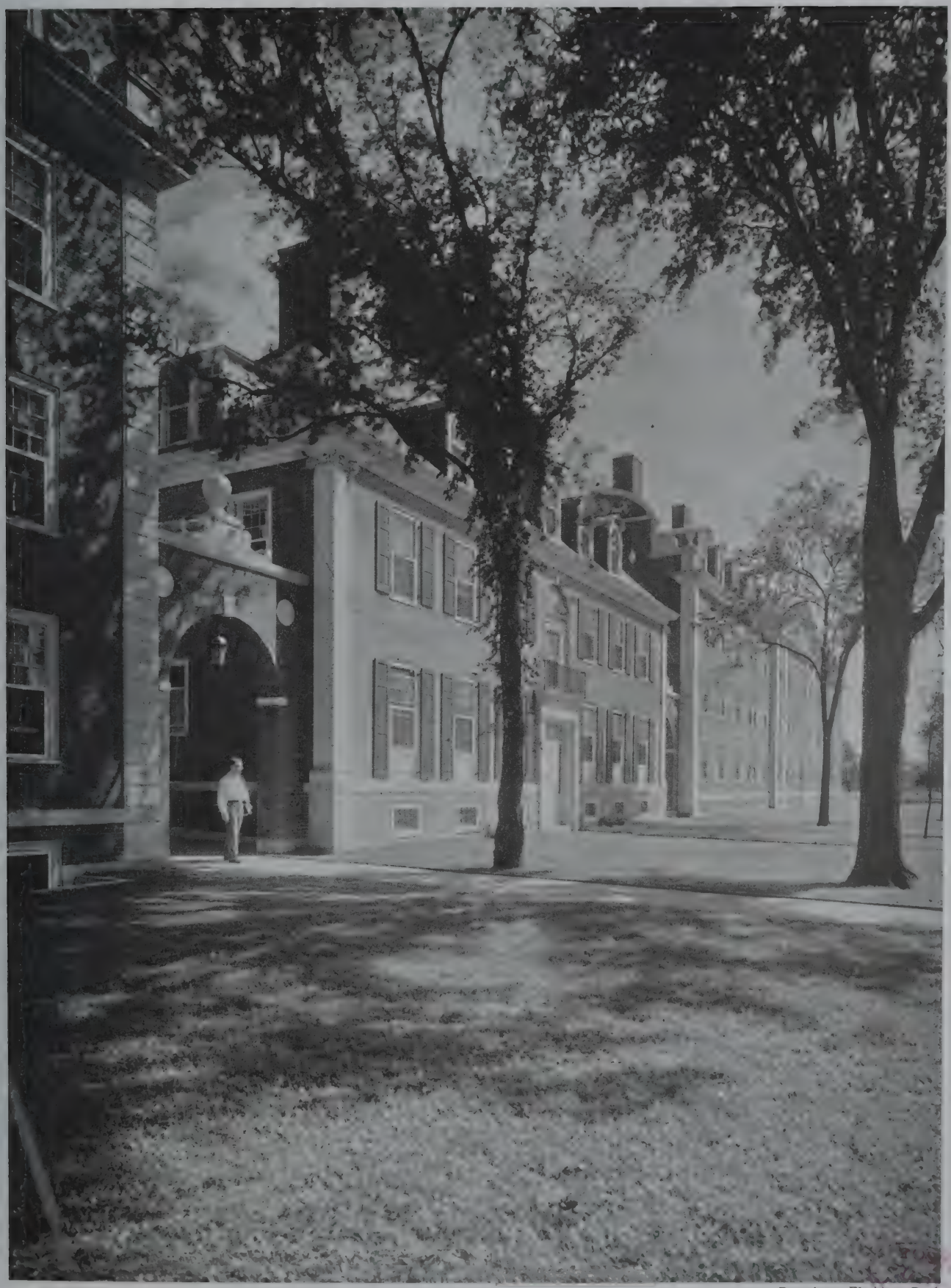


MAIN FLOOR

PLANS, MORGAN HALL

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS

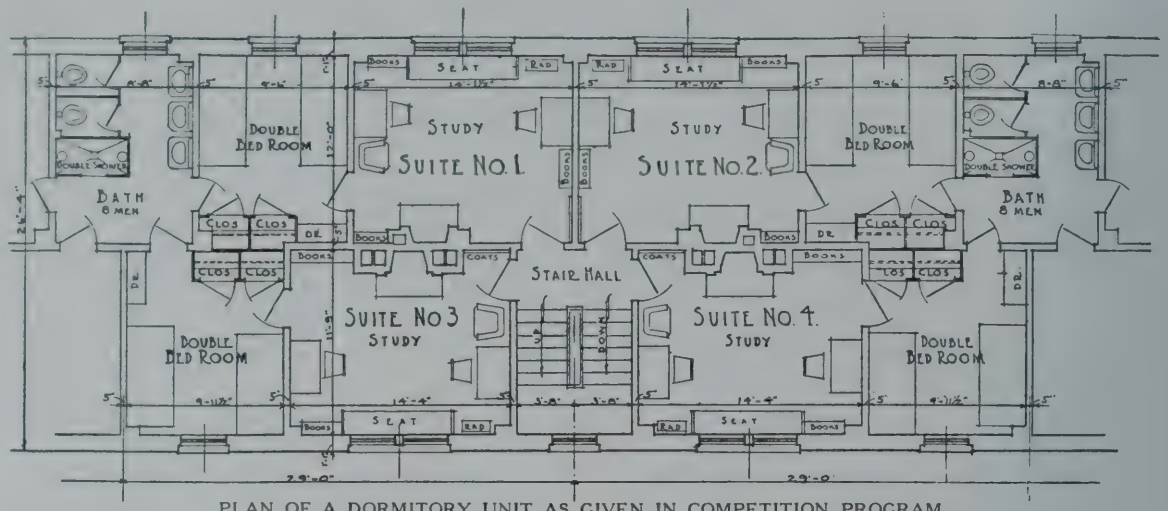


Dormitory Plans on Back

DORMITORIES AND SHERMAN HALL

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



PLAN OF A DORMITORY UNIT AS GIVEN IN COMPETITION PROGRAM

FIRST FLOOR

PLAN: WEST HALLS, DORMITORIES

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

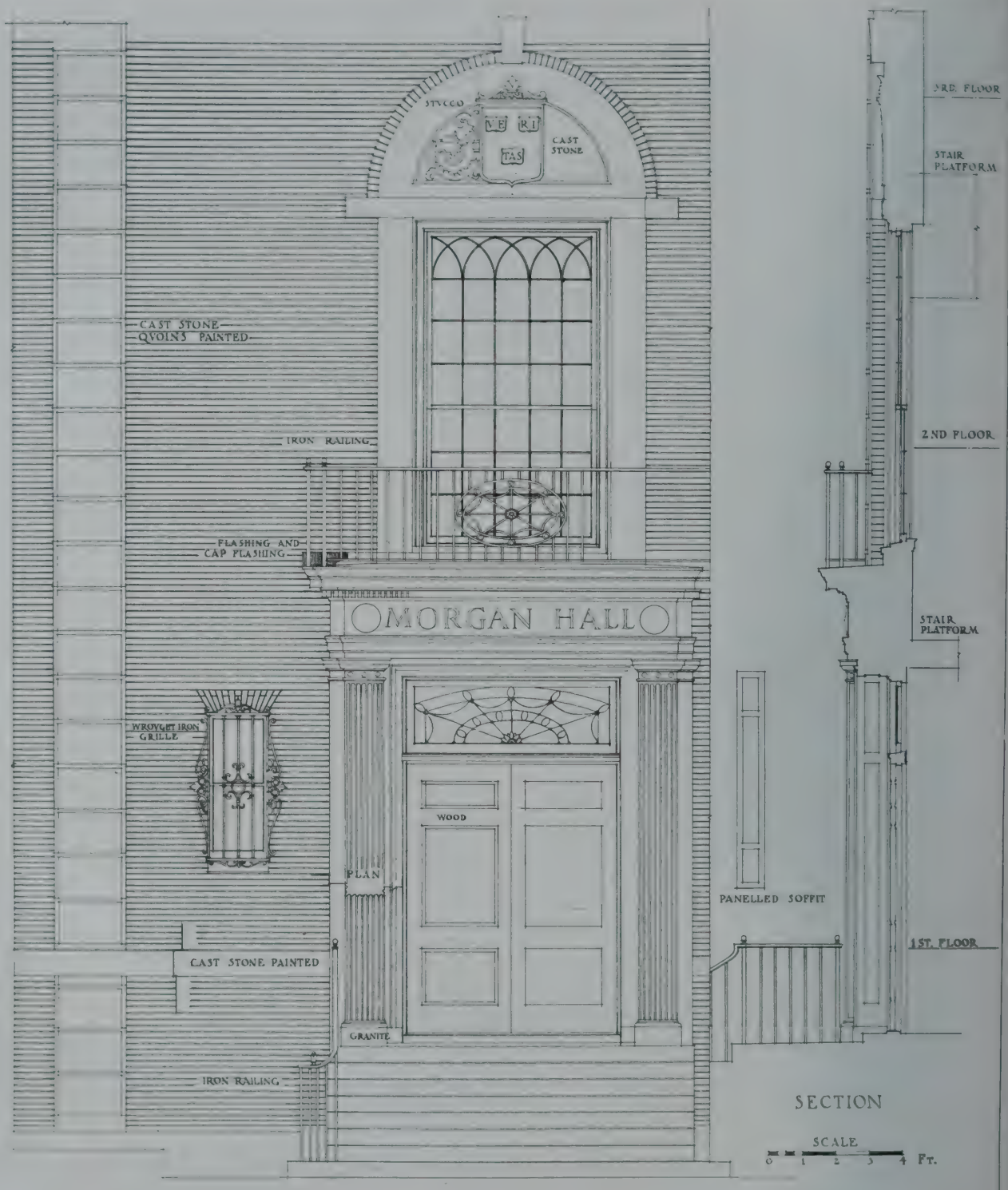
McKIM, MEAD & WHITE, ARCHITECTS

Detail on Back

ENTRANCE, MORGAN HALL

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



ELEVATION OF NORTH ENTRANCE.

ADMINISTRATION BVILDING.

SCHOOL OF BVSINESS ADMINISTRATION HARVARD VNIV.

McKIM MEAD AND WHITE ARCH'T'S.

OCT. 1927

No. 38

Detail on Back

ENTRANCE, FACULTY CLUB
HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
McKIM, MEAD & WHITE, ARCHITECTS

SECTION

ELEVATION OF CENTRAL ENTRANCE

OCT. 1927

FACVLTY CLVB

SCHOOL OF BVSINESS ADMINISTRATION - HARVARD VNIV.

McKIM MEAD AND WHITE - ARCH'T'S.

No. 39

SCALE

0 1 2 3 4 FT.

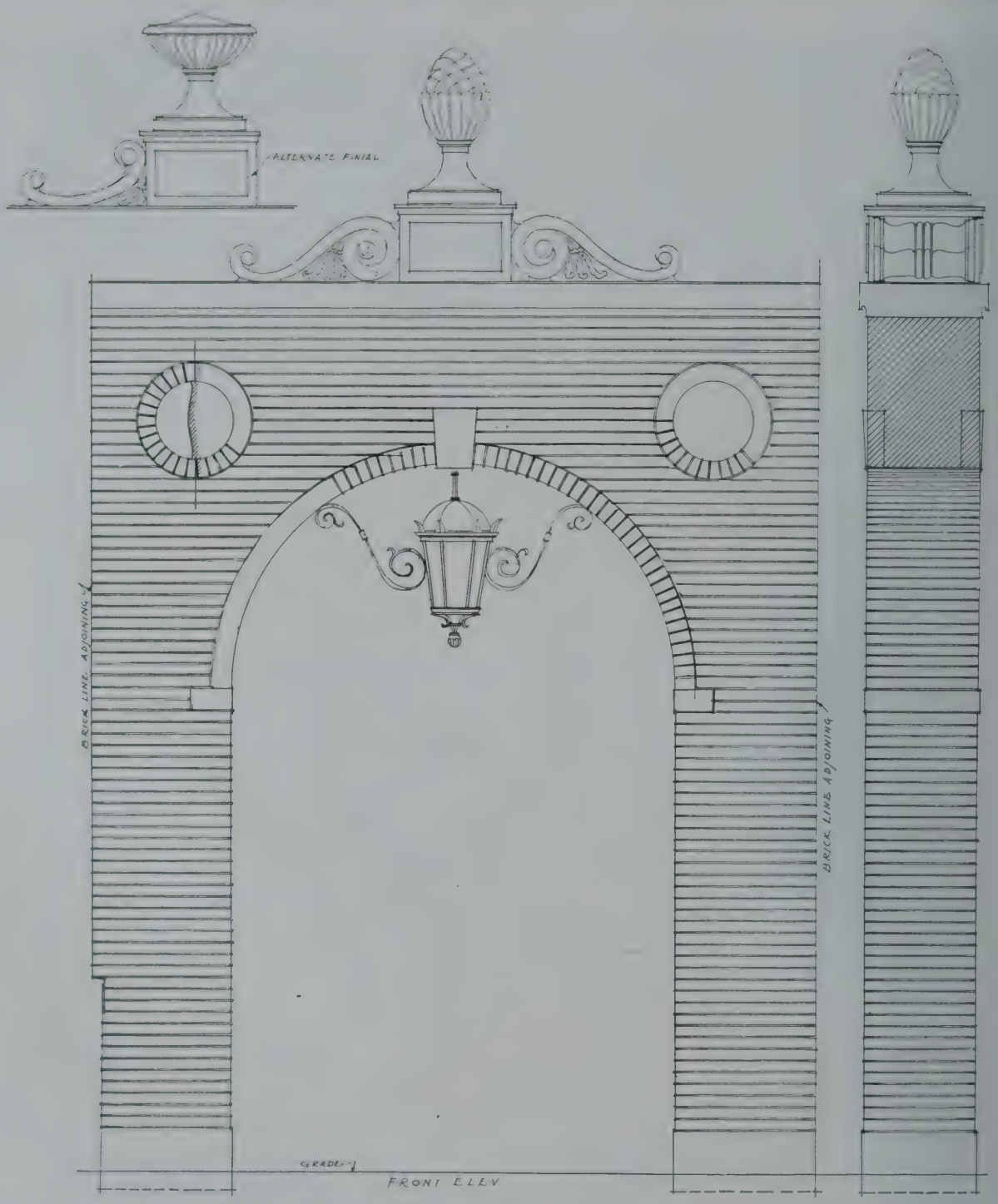
The Architectural Forum Details

Detail on Back

A CONNECTING ARCH

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

McKIM, MEAD & WHITE, ARCHITECTS



ARCHED CONNECTING WALL
SCHOOL OF BUSINESS ADMINISTRATION
HARVARD UNIVERSITY
SCALE
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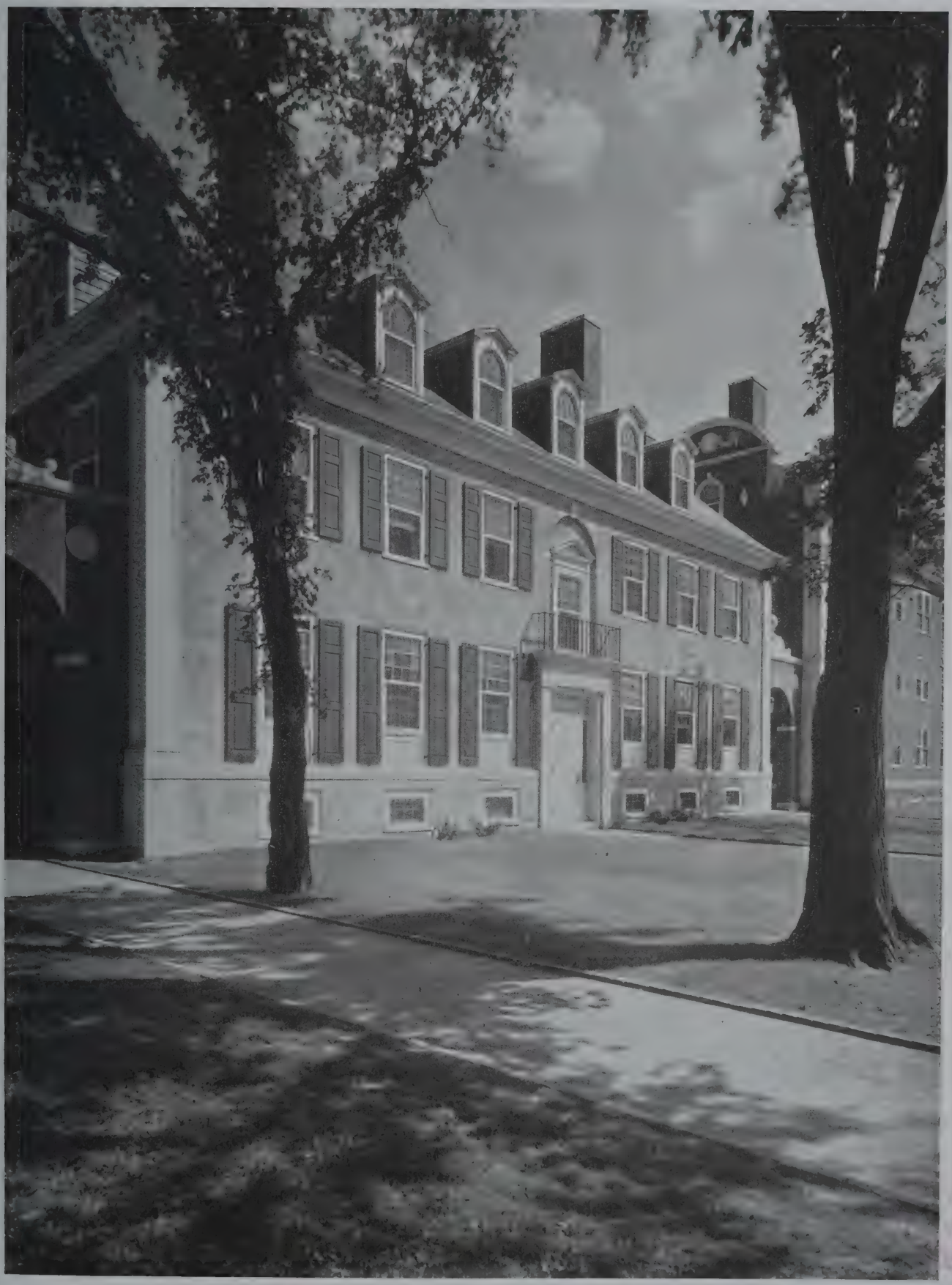
OCT. 1927

No. 40



SHERMAN HALL
HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
McKIM, MEAD & WHITE, ARCHITECTS

(Continued from page 312)

The general scheme for the Baker Library, worked out before the competition, with the delivery desk as a center, with stacks, working spaces, and reading rooms as near it as possible, was changed by increasing the number of classrooms as already noted and also by enlarging the working areas and by placing the main stairs between the delivery room and the westerly working spaces. The resulting first floor shows an entrance hall, without monumental stairs, on the main axis. Instead, there is an arched opening with iron grille showing the main stack behind it. Students can return books at this opening on the way to their classrooms without going upstairs to the main desk. A secondary desk may be established here in the future. The main stairs are on one side, so as to avoid interference with the delivery desk on the second floor. Symmetry would have called either for stairs on the main axis or for a second flight on the opposite side of the entrance hall, but the fact that any stairs at all in this position placed a barrier between the delivery desk and the working spaces in the second floor made it desirable to use one instead of two. The walls of the entrance hall are so constructed that they can in the future be changed to receive glazed exhibition cases. Most of the first floor is given up to classrooms. The method of teaching in the School is largely by student discussion of specific cases in class, directed by the professor. The seating in most of the rooms is therefore curved in plan and stepped so that students can more easily debate with one another across the room. In sections, the basement is 15 feet high, top to top; the front part of the first story, containing classrooms, is 22½ feet high, top to top; the working spaces are one-half this height, 11¼ feet, top to top, thus giving two mezzanines; and the stack tiers one-third this height, 7½ feet top to top,—eight tiers in all. The classrooms are therefore amply lighted by large windows, although they face north. The working areas, although only 9½ feet and 10 feet high in the clear, are well lighted even to the greatest depth of about 30 feet from the outer wall, because the windows are wide, with tops flush with the ceiling, and face south. When future extensions of wings and stacks are made, the present working areas will be lighted from courts about 40 feet square, but it is believed that they will still have ample light in the portions most used,—that is, for 20 feet or so inside the window walls. The second floor is the library floor proper. The student, entering the delivery room from the top of the main stairs, can turn to the right to the delivery desk, to the left to the reading room and reference desk, or go straight ahead to the card catalog corridor. Skylights over the stair hall and the delivery room give ample natural light, which would not have been possible if the delivery room had been in the first story in the same position. The School's methods require use of a large number of reserved books, which are placed in the stack tier immediately behind the delivery desk. The delivery desk is unusually long, 30 feet, because many students may come to it at one time, and also because it is used in part as the most convenient place for posting notices, which are placed under its glass top. Back of the desk for its full length three tiers of the stack show, so that on both the first and second floors the existence of the stack

Photos. Paul J. Weber

The John W. Weeks Memorial Bridge

is emphasized. No pages are employed, because the use of the Library is very largely for reserved book use, supplied directly by the desk attendants. The relatively small number of books from other parts of the stack are brought by attendants in the adjacent working areas, who are kept busy most of the time on other work. The number of the book wanted is telephoned to them through the dictograph at the desk. There are no pneumatic tubes or conveyors.

The reference desk, at present in the reading room, will eventually also be extended into the delivery room, the two parts being connected by a door for the attendants. The card catalog files line one side of a corridor open to students and leading to the reading room, and the drawers are arranged so as to be drawn out either into the corridor by the students or into the working space by the attendants. A catch on the working space side prevents the drawer from being accidentally pushed through onto the floor, and a light, operated from the students' side, calls the attention of the workers when a drawer desired by a student is being used by the workers. On the westerly side of the delivery room, balancing the main catalog, is the beginning of a digest catalog, that is, references on cards to the subject matter in the collection. These drawers also open outward for students and inward to the working spaces. The reading room, extending the entire length of the northern front in the second story, is about 43 feet wide, 240 feet long, and 24 feet high to the crown of the segmental ceiling. It seats 422 men. It is divided approximately into thirds by coupled columns in a Palladian motif to break up its length. The ceiling curve was adjusted to give desirable acoustic qualities, and the floor is of rubber, but no other precautions were taken to obtain quiet. The tables are 4 feet by 15 feet, spaced 62 inches in the clear, but with occasional wider spaces for trucking. There are 10 seats to each table, so that each man has a space 3 feet wide by 2 feet deep to the center of the table, and there are no table lamps to interfere with his work. This unusually roomy seating is desirable for the students in this School, because of the number of books they have to use at one time. The room has a balcony on one side and bookcases all around holding the reference books in most common use.

Most of the natural lighting of this room comes from the windows on the northern front. Some direct sunlight enters through the eastern and western end windows in the early morning and late afternoon, but not enough to require shades, which are preferably to be avoided if possible. The window lighting is supplemented by skylights, most of which are on the southern slope of the roof, where they are unobjectionable architecturally. The direct sunlight is diffused by the glass in the skylights and in the ceiling lights which occupy about one-third of the segmental ceiling. In the middle portion of the room, back of the entrance portico colonnade which darkens it somewhat, a skylight shows on the northern slope of the roof where it was undesirable, but it was felt worth while to make sure of adequate natural light, and the thoroughly satisfactory result justifies the method. Artificial lighting by table lamps, cove lighting, lights above the ceiling lights, bookcase lights, units hung from the ceiling, and various combinations of these, were considered, and the final decision was to use 34 units hung from the ceiling

Glass Hall, Harvard Graduate School of Business Administration

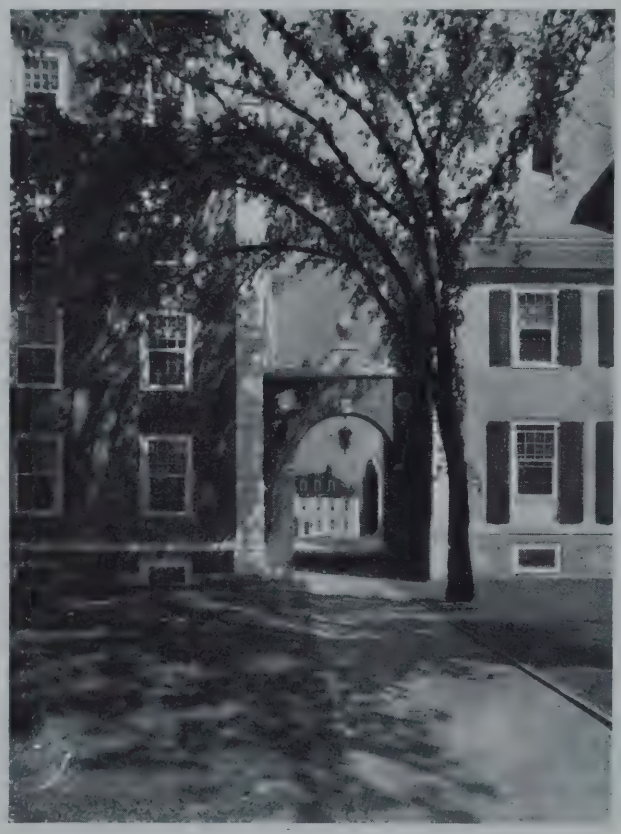
about 12 feet above the floor, each covering an area of about 13 by 22 feet. These units were especially designed and may be described as an indirect type having its own reflecting ceiling included in the fixture itself. The fixture is 36 inches in diameter with an annular plaster reflecting surface, segmental in cross section, above the lamp and facing down. This surface is so brilliantly lighted that it has to be concealed from the eyes of the readers by an ornamental circular bronze "skirt" about 12 inches deep, so that, even in this very long room, a reader looking up at any natural angle from his work can see only the bottom of the globe below the reflector under the lamp, and this globe has only diffused light showing through it. The lamps are 750-watt and give ample light. No table lamps are used, although outlets are provided in the floor in case it is ever felt desirable to install them on some of the tables, and outlets are also provided for future bookcase lights. Lighting the entire room with 34 units seemed to be the cheapest in original cost, cheapest in cost of current, and easiest to keep clean and in order. The units have been criticized as being too numerous, but the dull bronze "skirts," together with the gilded caps of the pilasters all around the room, are generally admired as pleasantly enriching the room with the brown oak finish of its woodwork and brown strip rubber flooring.

The family of the late Senator Nelson W. Aldrich, of Rhode Island, has given his library on finance to the School, and is also finishing and furnishing the room to contain it. This room is on the first mezzanine floor, entered from the first landing of the main stairs, and has bookcases and wainscoting in oak and an ornamental plaster ceiling in low relief. Architecturally this room may be said to derive from English work somewhat earlier than the Georgian. William T. Aldrich, one of the sons of the Senator, is the architect of this room. Being a relatively small room in one of the low mezzanines, divided by bookcases into alcoves, and with a fireplace, the room will have an atmosphere altogether different from that of the main reading room, and both the books and the room are a much appreciated addition to the Library, aiding in the completing of its collections.

The main stack has eight tiers, the first level with the basement floor, the third level with the first floor, and the sixth level with the second floor. The working spaces at the basement, first, and second floor levels are therefore even with stack floors, but the working spaces at first and second mezzanine levels come midway between the stack floor grades. As trucks must pass from one to the other, and as ramps would be too long, the elevators were placed along the line of the partitions between working spaces and stack and provided with doors at each end so that trucks can be transferred from any working area to any part of the stack. The stack shelves are 19⅝ inches wide, the ranges are 50 inches center to center, and the tiers 7½ feet top to top. The side aisles are unusually wide because they are planned to serve the much larger stack to be expected in the future. The floors are of marble, and there are no raised thresholds in doorways through which trucks are to pass. The lights between the ranges are controlled by pull-chain switches at each end of each aisle. The stack stairs are placed with one side directly against the shelving, with no handrail on that side. This makes it impossible to change the particular shelves

Students' Club, Harvard Graduate School of Business Administration

which come back of the string, but the saving in space was considered worth while. The well sides of the stairs have a handrail but no balusters. The rise is 7½ inches, and the tread 10 inches, and they are entirely comfortable. The study cubicles for instructors and for some advanced students are 60 inches center to center and 43½ inches deep. The divisions are of metal, commencing 12 inches from the floor and extending to 5 feet from the floor, being open above that. Each cubicle has its own window, radiator, table 30 inches by 42 inches, chair, and electric light on a cord hung trolley-wise on an exposed conduit overhead. Three push-button elevators have been installed at present, but the framing allows more to be added as expansion occurs. The cars are 39 inches by 46 inches in clear inside, and hold five or six people, or two or three people, and a truck. They have doors at both narrow ends, for the reason already explained, except in the basement, where the machine rooms interfered. It would have been better to have the doors at both ends there also. There are four booklifts, each 20 inches by 28 inches, with doors at both ends. Accessions are received at the eastern end of the basement, either by hand down the area steps, by runway, or by sidewalk elevator. They enter between the offices of the superintendent and the janitor into the unpacking room, and then go to the basement working space directly under the working area in the upper stories but extended out also under the court with a skylight above. Adjoining this basement working space is a two-tier stack for sorting and retaining accessions until sets can be completed. Books are then sent up to the cataloging room by booklift or, if the number is large, by truck in an elevator. A branch post office is established in the basement. A tunnel connects the Baker Library with Morgan Hall.



Arch in Dormitory Group

Morgan Hall, the Administration Building, contains offices for the Dean and his assistants, the Secretary and Registrar of the School, studies for professors, accounting laboratories, rooms for business research, and a laboratory for the study of industrial physiology. As the offices of the Dean and the general office on the first floor required a deeper building than was necessary in the upper floors, the first story was made about 14 feet high in the clear in general, but only about 10 feet high in the one-story portion in the rear between the wings. This gives high, dignified general offices, and windows over this low roof and close to the ceiling of the general office give direct sunlight and a cross circulation of air in this room which make it both light and cool. Many of the professors' offices have fireplaces, are well supplied with bookcases, and have flooring of rubber strips resembling brown floor boards, and they are so grouped by departments separated by narrow corridors that they have something of the atmosphere of studies in a dormitory rather than rooms in an office building. The basement has many workers, and the building was therefore set well out of the ground and the windows were made larger than the architects liked. They have proved to be good working rooms, even in hot summer weather.

Three or four points suggested by his experience on this project interested the writer and may be of interest to the profession. The almost unanimously favorable testimony of the large number of clients who wrote letters of reference for the architects applying for admission to the competition is a cheering contradiction to the *non sequitur* of some engineers and builders that if a man is architect enough to insist upon beauty he will therefore neglect utility and economy. A simple straightforward plan won the competition and was carried out in its most important essentials, so that in this case, at least, the competition not only resulted in the selection of an architect, but in the selection of a general scheme. When a college building is to be built from funds given by a resident of another state, and is to be used to educate students from all over the world, should the architects, contractors, and material men be selected from local firms because the college is exempt from local taxation, or can it be argued that the college should be free to go as far for its architects and contractors as it does for its donors and students, always providing it can thus obtain better service and is thus enabled to give more service to its students? Should college buildings be expensive and richly decorated, or should they be simple although well designed?

The Forum Studies of European Precedents

EIGHT LOGGIAS IN FLORENCE

ALTHOUGH the loggia in this illustration was the last built of those here shown, it does come first in style. Brunelleschi designed this great palace for Luca Pitti, and the main portion was erected in 1435; but these loggia wings were not added, it seems, until 1763,—more than three centuries later. However, they almost appear to be part of the original work, as they possess the same rustication, band course and balustrade. The only variation is in the treatment of the voussoirs, which form a more nearly pointed arch because of the comparatively close spacing of the openings. Far more noted for its loggia is Brunelleschi's famous *Ospedale degli Innocenti* (1421-1445), shown on the next page. This has served as a model for arcades through the centuries, and rarely has it been surpassed. The simple cavetto above the cap serves to take the arch without over-stilting it, as was so often the case when the whole entablature was included. It forms a pleasing transitional element that visually relieves the load on the cap. The arcade of the courtyard does not seem to require this feature because it is so much smaller in scale. The "little brown fellow's" feeling for scale and detail is shown in these arcades, in the simplification of the cap and moulding of the smaller interior arcade, and in the omission of the impost block. The bosses under the wall-caps have been lightened and also refined. This loggia receives more attention from the visitor because of the della Robbia *bambinos* than because of its architecture.

It is interesting to compare the *Innocenti* loggia with that of 40 Via San Gallo. The latter suffers because of the heavy arch mouldings and would be better if it had colored terra cottas in the spandrels. It does show, however, the more usual flat pilaster cap to take the vaulting on the inner wall,—a form more fitting than the half-round. The other illustrations show, in addition to the rich Palazzo Vecchio court, the colorful market place, a smaller interior courtyard, and the more domestic loggia under the cornice of the Palazzo Vecchio.

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Photos. Paul J. Weber

LOGGIA, OSPEDALE DEGLI INNOCENTI, FLORENCE (1421-1445)

Filippo Brunelleschi, Architect

The Forum Studies of European Precedents; Plate 98

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LOGGIA OF THE COURT, OSPEDALE DEGLI INNOCENTI, FLORENCE

Filippo Brunelleschi, Architect

The Forum Studies of European Precedents; Plate 99

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LOGGIA, NO. 40 VIA SAN GALLO, FLORENCE

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LOGGIA OF THE COURT, PALAZZO VECCHIO, FLORENCE (1565)

Decorated by Marco de Faenza

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MARKET LOGGIA, MERCATO NUOVO, FLORENCE (1547-51)

Giovanni Battista Tasso, Architect

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VESTIBULE AND COURT, PALAZZO ANTINORI, FLORENCE

The Forum Studies of European Precedents; Plate 103

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LOGGIA, PALAZZO VECCHIO, FLORENCE

The Forum Studies of European Precedents; Plate 104

ENGINEERING DEPARTMENT

The Construction and Equipment

of the

HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

BEFORE these buildings could be located, the intentions of the authorities having to do with planning and constructing roads, parkways, water supply systems and sewers in the Metropolitan District had to be ascertained. The relatively low level of the finished grades in relation to the river and the adjacent sewers needed careful study, since every foot the finished grade was raised meant a large volume of required fill, while the lower the basement floor was placed the greater the risk of dampness. About three-quarters of the areas of the foundations reached good bottom at a reasonable depth, but this good bottom sloped downward at the easterly end of the ground and was overlaid with peat and fill. About one-quarter of the foundations, therefore, were carried down through this peat on concrete piers averaging about 3 feet in diameter, belled out to about 6 feet at the bottom. These piers, spaced about 14 feet apart under the outer walls, supported the concrete foundation which acted as a deep beam from pier to pier. In one portion, where the basement was deepest, several feet of fill placed on top of the peat to form a road caused the peat to compress and flow laterally so as to slightly displace three or four of the concrete piers. Uncertainty as to what this displacement had done to the bottoms of the piers made it seem advisable to put down three new piers between the old to insure safety.

Some of the underground piping and cables were of large sizes. The water supply is 8 inches; steam supply pipes from across the river are 10 inches; sanitary sewers 12 and 15 inches; and surface water drains 30 inches. These pipes, where buried in the peat or in fill above it, were supported where necessary on wooden piles cut off below the level of the water in the river and extended up in concrete. Some of these structures moved laterally and some vertically as the fill was brought up to grade. An 8-inch cast iron water pipe, secured to the outside of the foundation wall by 1-inch diameter brass U-shaped

Preliminary Drawing, Arcade Joining Dormitories
McKim, Mead & White, Architects

stirrups set horizontally, settled under the weight of about 6 feet of fill above it enough to break some of the stirrups at the root of the thread which had been turned on the ends to increase the bond resistance in the wall. Electric cables were broken by the soil movement. In the Freshman Dormitories, built about 13 years before across the river from this group, cast iron house drains beneath the basement floors have been attacked by some agency in the soil which has apparently dissolved the iron, leaving only the carbon, with the result that they have become brittle, can be whittled with a pen knife like a hard lead pencil, and have cracked and leaked. To guard against this trouble, the house drains under the kitchen portion of the Business School basement were encased in concrete, cast on the under side of the floor, which itself had to be reinforced to carry from footing to footing over the peat in this part of the area. The peat will undoubtedly continue to settle for years, carrying down the soil above it. The lawn above this peat has already settled about 4 inches in places, and the maintenance of trees and shrubbery on such ground presents a troublesome problem, since the ground level is continually disturbed.

The whole group of buildings is of fireproof construction with the exception of the roofs of the dormitories. These were originally designed with a gambrel section in most of their length and intended to be constructed of steel and concrete. A considerable saving was made by changing the gambrel to a pitch roof and having the rafters of wood with fiber insulation and metal lath and plaster ceilings in the attic. The walls of the dormitories are of brick backed with hollow tile, and are bearing walls except at the dining rooms. The floor construction is of reinforced concrete joists with hollow tile fillers, the tile in general being 4 inches deep and the top slab 3 inches, which includes the surface finished to receive the rubber flooring without any fill. In the Baker Library and Morgan Hall the roofs as well as the floors are of fireproof construction, the floors being of reinforced concrete joists with hollow tile fillers 4 or 6 inches deep, supported on steel girders and columns, including columns in the outside walls. Rubber flooring has been very extensively used. In the dormitory studies, in the professors' studies, and in the main reading room of the Baker Library this is in the form of strips 6 and

General View, Harvard Graduate School of Business Administration

8 inches wide, 6 feet long, resembling brown floor boards. In some other rooms it was used in the form of square tiles, and in other places in sheets 3 feet wide. Acoustic plaster was used in the ceilings of the dining halls. Working spaces and classrooms in the Library were finished with acoustic felt, which was also used above the kitchen. The walls and ceilings in the dormitories were finished in a plaster containing coloring matter which, while increasing the cost of the plastering, saved the time and cost of painting. It can, of course, be painted or covered with burlap in the future when it is required. It could also be treated in any other way.

The buildings are heated by water which is heated in the basement of McCulloch Hall by steam brought over the John W. Weeks Bridge from the power house of the Boston Elevated Railway. It is circulated by pumps in the same place, distributed by supplies in the roof spaces, feeding downward to the radiators as single-pipe risers. The bedrooms in the dormitories have no radiators, and the radiators in the studies, except the studies with beds in them, have no valves, as inquiry in other dormitories of the University disclosed the fact that they were very little used. Plenum fans are used in the Baker Library for ventilation of classrooms, reading room and stacks, with exhaust fans for the toilets. Plenum fans are used in Morgan Hall to ventilate the basement and exhaust fans to ventilate the laboratories on the top floor and also the toilets. The buildings are faced with a hand-made, water-struck red brick laid in Flemish bond. Some of the headers are black, but more of them have a grayish green vitreous surface of different shades. The mortar joints are $\frac{3}{8}$-inch thick, raked out roughly to a depth of about $\frac{1}{8}$-inch. The vertical joints are slightly out of plumb, but there is no eccentricity of wide joints or skintling or sand-blasting to imitate age; the brickwork simply resembles that of the older buildings of the University, built during the last 25 years. There is some granite, limestone and marble trim, but the quoins and some of the gable coping and ornamental work are of cast stone painted ivory to resemble the wooden quoins sometimes used on Colonial brick buildings. The whole library portico is of wood, as are also all balustrades and cornices. The urns are of copper, and there is some cast lead ornamental work, all painted ivory like the quoins and window

Morgan Hall, Harvard Graduate School of Business Administration

frames. The clubs and instructors' houses are of a grayish cream stucco on brick, as are also portions of the facades on the dormitory courts. The roofs are covered with gray slates from Virginia, ¼-inch thick, and the sides of the dormers are covered with lead-clad copper. The entire use of materials is consistent.

A number of features which the architects felt were desirable to finish the design were omitted for the sake of economy, although in some cases provisions have been made in framing or otherwise to add them in future if found practicable. The architects particularly regretted the omission of the tall cupolas or towers, which they designed for Mellon and Hamilton Halls, the two dormitories on the Parkway, which are about 300 feet long each and need some break in their roof lines. They also urged the need of more balustrades in the dormitory groups above the cornices at the foot of the sloping roofs as well as shutters on more of the windows. Very little money could be spent on cut stone or on interior marble, on wainscots and mantels, or on ornament in general. Everyone connected with the work would of course desire more and larger trees to soften the lines and to give shade and seclusion. A fence would help to give privacy and would add to the unity of the composition as a whole, something which is to be desired.

The Library from Gallatin Hall

The dormitories cost about 80 cents per cubic foot, the Baker Library about 65, and Morgan Hall about 62. The cube was measured to include 2 feet below the basement floor and the true cross-section of the sloping roofs. This cost includes that of the competition as well as architects' and engineers' fees, and also the cost of the tunnels between the buildings, but it does not include the utilities outside the buildings nor the filling and landscape work. About 52 per cent of the work was sublet, leaving 48 per cent to be done by the contractor direct,—a rather large amount as compared with the general custom of the contractors, who frequently sublet the greater part.

The dormitory halls are named after Secretaries of the Treasury, selected by Mr. Baker, who in his long banking career has enjoyed close relations with many of them. The Administration Building was named after the late J. Pierpont Morgan, a long-time friend and business associate of Mr. Baker's. The Library will be called the Baker Library after Mr. Baker himself, although, of course, the entire group is to a greater or less extent a memorial to him.

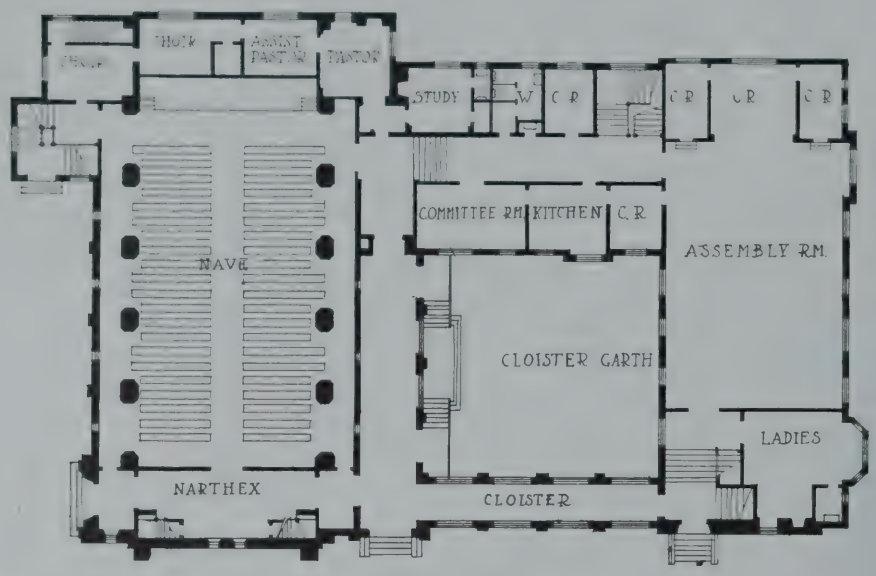
McKim, Mead & White were the architects, with William Mitchell Kendall, himself a Harvard graduate, directing the design with full and sympathetic appreciation of the environment and of the desire of the University authorities to make the environment count educationally. Mr. Fenner did his valuable part until his death, and added to the large number of those who admired and respected him. C. J. White, not to be confused with Lawrence Grant White of the firm, had charge of the whole project under Mr. Kendall's direction, and his patience and efficiency were appreciated by all of those who represented the University. President A. Lawrence Lowell and Wallace B. Donham, Dean of the School, both men who take an unusually practical, intelligent, and fair minded interest in architectural problems, gave much time to the project, even to details. The writer served as Professional Adviser, not only during a half-year sabbatical at the time of the competition, but also for the whole period of the construction in addition to his work in the Department of Architecture.

This very complicated project required the coöperation of a very large number of people, including also governmental bodies, public service companies, and labor, all of whose rights, duties, opinions, and even prejudices were fairly and tactfully considered. It had to be carried through quickly and yet economically and with a long look into the future, because college buildings endure through long periods, during which educational methods often change. These results had to be accomplished by men most of whom were busy and burdened with other responsibilities. Two buildings at Harvard have been in use for 200 years, and it is desirable on sentimental grounds that the externals at least of college buildings should last through the centuries, although educational methods will change. This fact was constantly in the minds of the designers, who exercised careful discrimination in the selection of materials of both the structures and of the highly important mechanical plant.

Plans on Back

WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.

CLARK & CROWE, ARCHITECTS



MAIN FLOOR

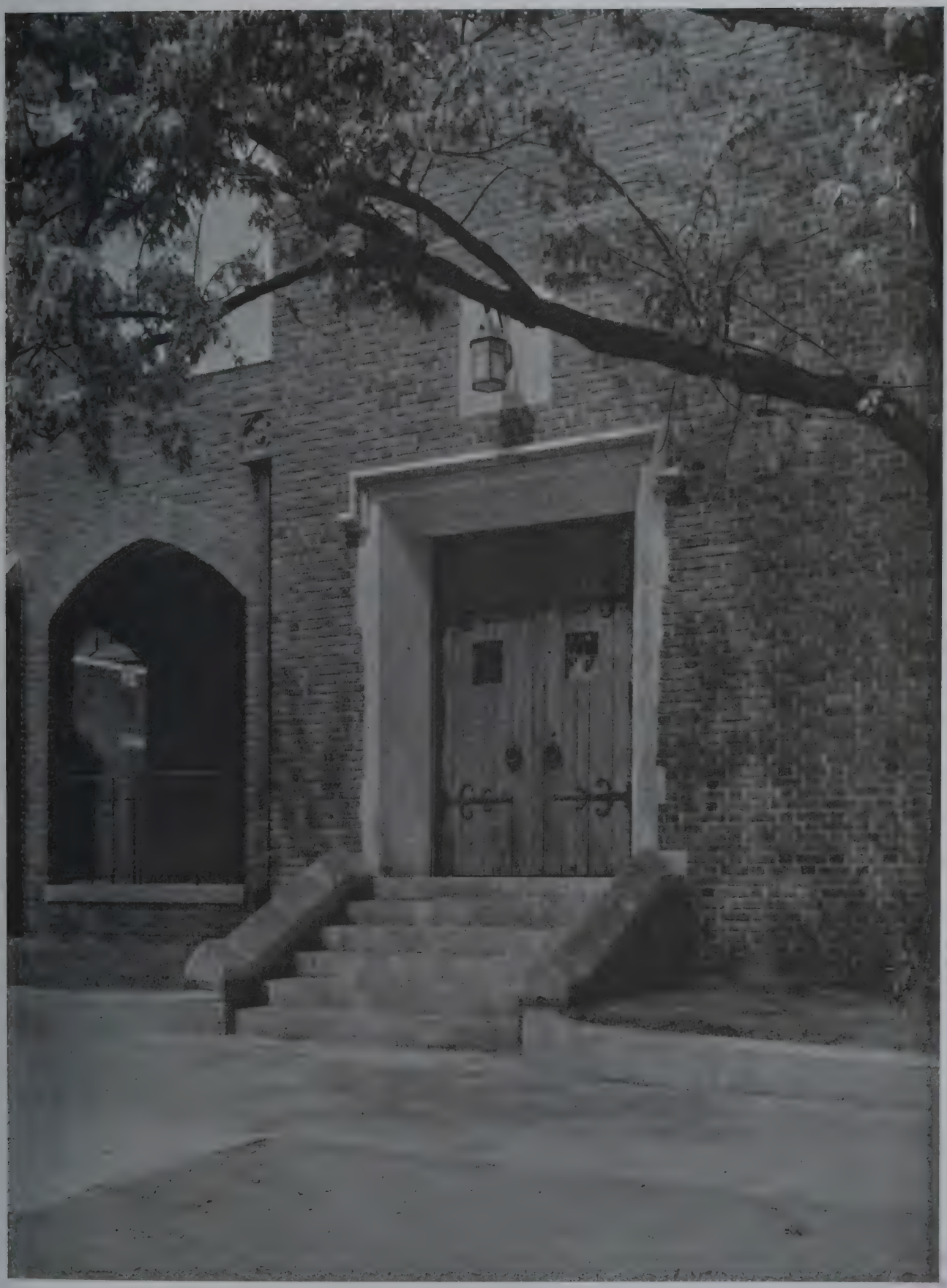
BASEMENT

PLANS, WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.
CLARK & CROWE, ARCHITECTS

ENTRANCE

WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.

CLARK & CROWE, ARCHITECTS



ENTRANCE TO SUNDAY SCHOOL
WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.
CLARK & CROWE, ARCHITECTS

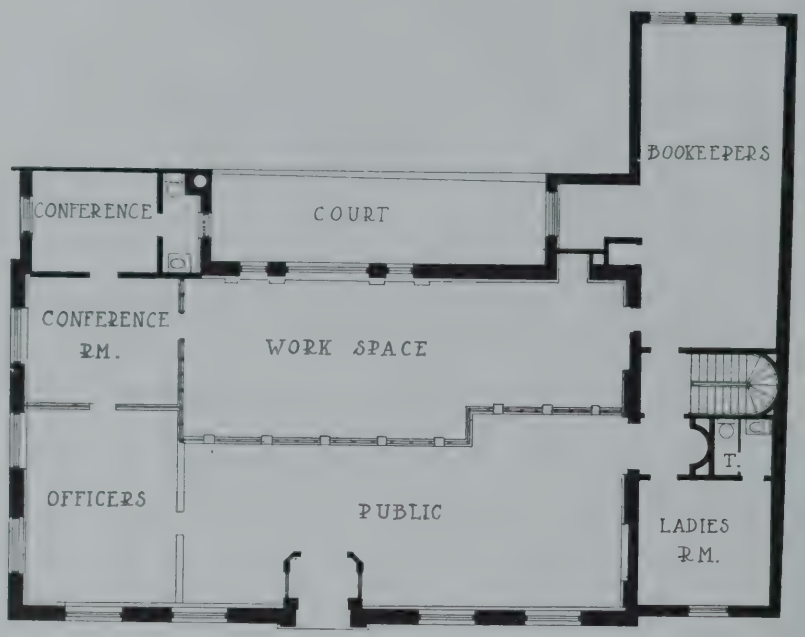
SUNDAY SCHOOL
WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.
CLARK & CROWE, ARCHITECTS

NAVE, FROM THE CHANCEL
WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.
CLARK & CROWE, ARCHITECTS

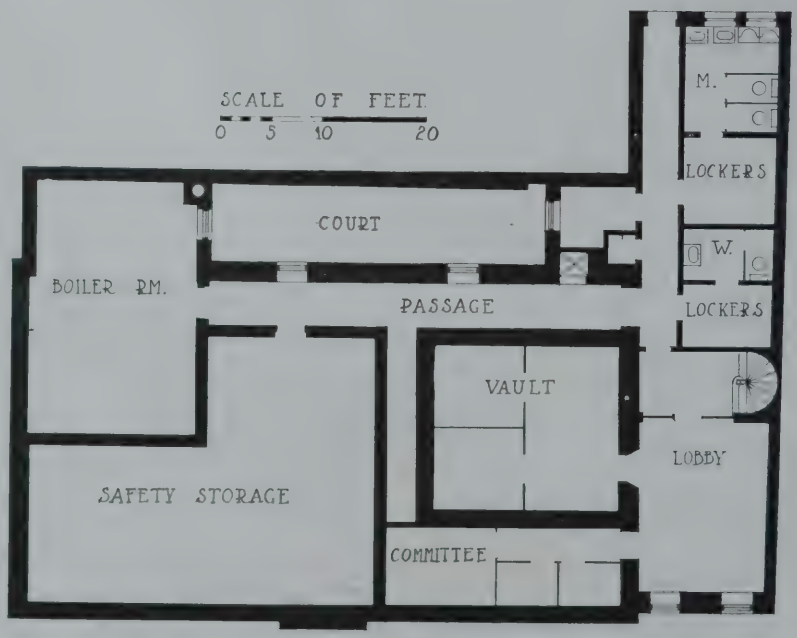
PULPIT AND ORGAN GALLERY
WESTMINSTER PRESBYTERIAN CHURCH, LYNCHBURG, VA.
CLARK & CROWE, ARCHITECTS

Plans on Back

BURLINGTON TRUST CO., BURLINGTON, VT.
JAMES W. O'CONNOR, ARCHITECT



MAIN FLOOR



BASEMENT

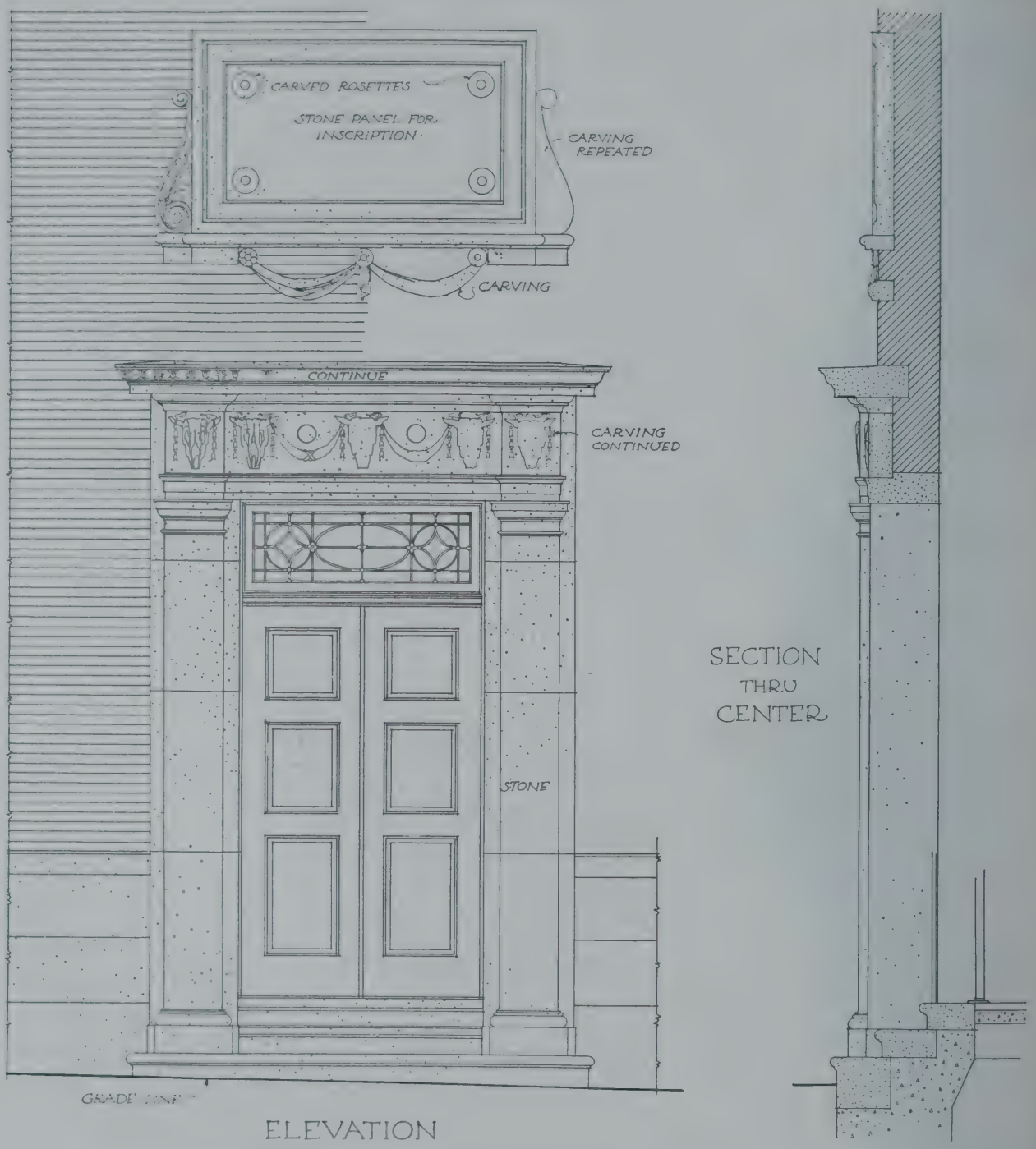
PLANS, BURLINGTON TRUST CO., BURLINGTON, VT.
JAMES W. O'CONNOR, ARCHITECT

Detail on Back

ENTRANCE

BURLINGTON TRUST CO., BURLINGTON, VT.

JAMES W. O'CONNOR, ARCHITECT



ELEVATION

DOORWAY DETAIL

OCT. 1927

SCALE IN FEET

0 5 10

No. 41

Old Philadelphia Interpreted Anew

By MARGARET L. LAW

JANGLE of traffic and the strident notes of siren and horns; the never-ceasing thud of passing footsteps; modernity in all its ugliness and its endless hurly-burly;—then quite unexpectedly one comes upon a simple, red brick building whose dignity and repose bespeak "other days, other ways." As one crosses the threshold, one shakes from the feet the dust of city streets. The clatter of the market place is left behind, and the visitor feels himself back in the peaceful atmosphere of the eighteenth century Quaker City. Only here the time-revered Georgian architecture is used with peculiarly modern purpose. The building is not a town residence of the seventeen-eighties, but a bank whose function it is to meet today's needs—the Mid-City Office of the Provident Trust Company of Philadelphia, near the city's center.

Mid-City Office of Provident Trust Company, Philadelphia
Carl A. Ziegler, Architect

At present American architecture, for both our homes and public buildings, holds a firm thumb-grip on the public's pulse and follows the vagaries of changing taste with alarming speed from season to season, perpetually re-incarnating itself in new guises. Many architectural styles, polygot in origin and difficult to understand, come and go like passing shadows on a screen. Byzantine and all the "Latins,"—French, Italian, and now particularly Spanish,—have their day; Gothic and High Renaissance, Lombardine and other styles unsuited for expressing the American temperament or for meeting our needs are hurled together in a bewildering hodge-podge;—one motif snatched from one period and nation, another detail adapted feverishly from something centuries and miles away in meaning. Hurled into the melting pot is such a jumble of ideas that the eye of the bewildered beholder can scarcely find a solution to the puzzle, and much less determine what really "expresses America."

Here, then, in this re-interpretation of the forms sponsored by our own colonial ancestors, there is a pleasing sense of stability. Here are welcome austerity, simplicity, freedom from the ornate, and from the strain after "originality of style." A familiar alphabet spells something new in purpose, but the language is strange to us. Moreover, since we are persistently told that America's dominant life today is her business life, why should not American tradition be interpreted in this architecture of big business with a peculiarly constructive value?

Difficult indeed is this achievement of a sense of permanency combined with the elasticity which bank planning today demands. A few decades ago it was comparatively simple; then deposits of twenty millions meant a huge bank. Even two decades ago the half-billion, which forms the deposits of a large bank today, sounded like a fantastic dream to both banker and architect. Telephone, typewriter and the Federal Reserve System have revolutionized the banking business and, accordingly, the architecture which expresses it. In 1900 there were three clearly defined types of banks:—commercial banks, savings banks, and trust companies. Now national banks have opened trust and savings departments; trust companies handle commercial accounts; and each type has established numerous branches. Savings banks have taken over other savings banks as branches. The fact remains that the bank is the servant of commerce and industry and the guardian of the people's wealth, and so it must possess every device for giving the maximum of intelligent and responsive service. Philip Sawyer, of the firm of York & Sawyer, architects of New York's Federal Reserve Bank, the Bowery Savings Bank, and numerous other great American bank buildings, says on this subject: "All that one can be sure of is that a modern bank is a living, growing organism, extremely sensitive to general conditions in this country and the world, to every change in the banking system, or to the new laws which may at any time modify its procedure, and that any shell intended to house it will be satisfactory only in proportion as it allows of the easiest modification of practice and arrangement." Such is the opinion of today's expert in building banks.

In marked contrast stand the Victorian reverence for dinginess in banks and the homage paid to the established form, however musty and ill-favored.

Entrance, Exterior

Agnes Repplier, in "Banks and Banking," writes most amusingly of this. She says: "A good many years ago I had the pleasure of seeing a great spectacular melodrama at Drury Lane (its name was 'Cheer! Boys, Cheer!' and it was one of the best of its kind), and the incident which most amused the house was the determination of a rich Australian to withdraw her account from the Bank of England because it was so dirty. She argued that an institution which would not clean itself up was no fit place for a woman's money; whereas the audience, being English, felt with all its soul that dinginess was the hallmark of conservatism. Every inch of grime on the face of a national bank was an added guarantee of its security. This is a familiar note in the literature of England. When Trollope wants to emphasize the authority of a very learned counsel, like Mr. Dove in 'The Eustace Diamonds,' he takes pains to lodge him in dim and dusty chambers. When Dickens wants to satirize the gullibility of the British public he paints in fantastic phrase the splendors which deceive them. The massive marbles and shimmering plate glass of the Anglo-Bengalee Loan and Life Insurance Company in 'Martin Chuzzlewit' stand for bankruptcy. The very clock and coal scuttles, the lettering of the circulars and the buttons on the porters' waistcoats shriek their warnings to the wise. A somewhat similar prejudice in favor of dirt and discomfort was not unknown to Americans a generation ago. Business of vast importance was transacted in offices austerly devoid of ease. Now 'the old order changes,' and the new order is becoming constantly more in accord with the dominant impulses of the age."

The sequel to what Miss Repplier writes is that the Bank of England has at last taken the drastic step and is being remodeled. Its architect recently

Banking Room, Provident Trust Company, Philadelphia
Carl A. Ziegler, Architect

came to this country to study the solutions that some of our large bank buildings offer to the problems of the moment. After a month he decided to stay for two months, and then declared his intention of destroying all the plans made during the past two years and beginning afresh upon a wholly new basis. Gone, indeed, is the day when power imposed itself through dinginess and when ugliness possessed financial value.

Here in the Provident Trust Company's branch office, this cleanest and newest of buildings, designed by Carl A. Ziegler, the ivory-toned woodwork and indirect ceiling lights give the effect of a country house flooded with sunshine. Cream colored walls and neutral floor coverings rest the wearied eye, and it seems that there has been exercised architectural and decorative restraint, with a freedom from ornamentation and an achieved simplicity. Over the teller's windows is the familiar classical cornice, and between them are simple fluted columns. Doorways, windows and minor architectural details are copied from historic buildings of eighteenth century Philadelphia. For instance, the exterior of the first floor of the building is almost entirely a reproduction of the Palladian window end of old Christ Church. The brick of which the structure is built, dull toned and weathered, are the same as those used in restoring the time-hallowed walls about Independence Square. The officers' desks reproduce the "signers' desk" now in Independence Hall. The customers' desks are modeled after one used by Thomas Jefferson and are of truly Jeffersonian simplicity. It became necessary to have a still smaller desk, so the old clerk's desk in Independence Hall was copied. Grandfathers' clocks mark the hours and play their part in relieving the modern sense of pressure and speed. On the walls hang a few silhouettes and old prints. A consulta-

Entrance, Interior

Banking Space, Provident Trust Company, Philadelphia
Carl A. Ziegler, Architect

tion room for customers is furnished in maple furniture of the Pilgrim century, and in the women's room "antique-ing" is indeed carried delightfully into the realm of business. It is said that votes for women have caused the polling places to be scrubbed and swept and garnished,—literally if not figuratively. Truly women have forever and a day been the world's housekeepers. Can it be that the yearly increasing number of business women, and the increasing familiarity of the average woman with business affairs have wrought a change in the housing of business? So changes in architecture would suggest.

Be that as it may, when one sits on a Hepplewhite chair and writes on a finely inlaid secretary,—a naturalized piece from old England,—the psychological effect is certain; business becomes a pleasure. Two Chippendale mirrors with finely carved frames reflect the patterns of old chintzes. On cold winter days the Venetian blinds are drawn, while logs crackle and flame on old andirons. A Terry clock stands sentinel on the simple mantel, and a Sheraton sofa is drawn conveniently close to the fireside. On the walls hang samplers and old prints, among them a Birch print of William Penn's home, "Solitude." There are vases of deep blue larkspur that look fresh from some old fashioned garden, and to complete the picture there are two diminutive chairs by the fireside, chairs on which wee folk of bygone days have sat and kicked their heels. Slight wonder, then, that Joseph Pennell, arch-critic of the beautiful and himself an apostle of the "wonder of work," exclaimed on entering this room that he felt carried back to the Pine Street home of an old aunt, where he spent happy childhood hours.

As one leaves these quiet rooms and returns again to the modern hurly-burly, it is with a sense that an organization so finely attuned to the best of the past must have much to offer for the present and the future. With Rudyard Kipling, one feels that: "The things that truly last, when men and times have passed, They are all in Pennsylvania this morning."

Consultation Room, Provident Trust Company, Philadelphia
Carl A. Ziegler, Architect

THE ARCHITECTS' FORUM

The Housing Problem in New York

By AYMAR EMBURY II

THE housing problem in New York is in many ways similar to that in other cities of the country, although by reason of the greater population of New York and the peculiar geographical formation of the city it is here in some respects more difficult of solution. Its cause is easily understood, since the economic difficulty at the root of the housing question is comparatively simple. It no longer pays to build tenement houses, because the wages in the building trades have advanced so much faster than those in other industries that the cost of construction is today so high that it is practically impossible to give adequate accommodations at prices within the ability of the average of our citizens to pay. It is not a question of excessive rentals; many years ago, at the time the tenement house laws were so drastically revised, the owners of buildings were getting rich on the poorest class of occupancy. Today returns in excess of from 6 to 8 per cent net are possible only on new apartment buildings of the class with rentals of from $25 to $30 per room per month or more, and the tenements or apartments which are considered "low priced" are renting at from $15 to $18 per room per month. Four rooms, that is a living room, kitchen and two bedrooms, are certainly the minimum accommodation for the average American family of five, and yet assuming this minimum and assuming that the family is willing and able to walk up to the sixth story, about the least at which this space can be procured in New York is $60 a month, and rooms at even this price can only be secured in the outlying districts of the city, where land values are not in excess of from $10 to $12 a square foot, for land values figure largely in the equation.

It is universally recognized that this situation is intolerable, and there have been proposed a number of methods of ameliorating it, of which the most promising is some sort of semi-charitable organization for the construction of low-renting tenement or apartment houses which shall be tax-free if the return on the investment is restricted to 6 per cent. It may be added that this is the only method suggested which offers a real prospect for success, but that this does offer such a prospect in uncontrovertible if a sufficient number of buildings are erected. The tax rate in New York is approximately 3 per cent of the assessed valuation, and the assessed valuation is kept as near the actual sales value of the property as the assessors can make it. Since the average net return on apartments renting at from $15 to $18 is somewhere in the neighborhood of 8 per cent, it would seem quite within reason that a company limited to 6 per cent return, and being tax-exempt, might be able to rent apartments for $12 per room per month or less. On the other hand, it is, to the writer at least, doubtful that such a solution in the long run would be wise. It cannot be expected that private enterprises with a limited return will be able to accommodate with homes all the people who literally cannot afford to pay more than $12 a room a month, and the construction of a limited number of such apartments is likely to discourage construction of purely commercial apartments or tenements intended to take care of the very class of people who need the lowest rentals. Also, since the real estate taxes in New York are already distressingly heavy, as expenses of administration increase with the population, the proportionate share of the taxation borne by the commercial tenement house will be increased, and the rents raised still further, because ultimately taxes are paid by the lessee and not by the lessor. This will result in further crowding of people into inadequate space, except the fortunate few who are able to rent in the state-aided, tax-exempt structures which are built.

There is certainly something fundamentally wrong in a civilization which does not automatically provide for its people; and the attempt to provide by arbitrary means, i. e. by state aid, for that proportion of the population which cannot otherwise live, is much more likely to be a step in the wrong direction than in the right. It will be recalled that in Rome, in the first century of our era, the population was so far in excess of the demand for labor that a large percentage of it was fed, housed, and even amused at the public expense. It is perfectly evident to us now that the Roman problem would have been far better solved by driving the people out of cities to places where they could make a living,—driving them out by starvation if necessary,—than by assisting in their support. It is not to be assumed that the Roman populace which got its bread and wine free was entirely composed of loafers and bums; more likely by far the great majority was of men who actually worked, but who did not receive enough for their labor to support themselves. There are actually many industries which could be conducted as well outside the city as in it, and with a result that would be economically far better in every respect. It was not so many years ago that most of the men's ready-made clothing in the United States was made here in New York,—if not all, at least a very large part; today it is said that the little city of Rochester manufactures more men's ready-made clothing than New York, and the companies in Rochester are making as much money

as they were here in New York, and their operatives are better housed, better fed, and better clothed than they would be here at any competitive wage.

The surveys made from time to time show that the number of rooms occupied for living purposes in New York has increased at only about a quarter of the rate of the population in the last 15 years. This does not, of course, mean that four people are living in every room where one lived before, but it does mean that a very considerable number of obsolete buildings are still being used for living purposes or have been altered to accommodate more people than was the intention of the original builders. Many of these houses are occupied in violation, if not of the letter, at least of the spirit of the tenement house law, and in further violation a considerable number of so-called "apartment hotels" have been erected, occupied mainly by well-to-do people, not overcrowded, perfectly sanitary, and generally with healthful living conditions, but which are in fact, if not in name, tenement houses and which violate in many respects the tenement house code now in effect.

Now it is assumed that most of us are sincerely anxious to commit no act, legal or illegal, which is opposed to sound public policy and to the health and well being of us all. There are, of course, a certain number of people who will do anything that is legal, provided there is money in it, and a somewhat smaller class who will do anything illegal if they can get away with it and profit by it financially. Both of these classes have been very active in tenement house construction here in New York, and while the architect is not legally responsible for their activities and is not often called upon to advise as to wise economic courses, he should be a leader in calling to the attention of the public what is and what is not for the ultimate good,—and endeavor to guide his clients along the best lines. That the tenement house law should be changed in certain respects is probably true. Certain of the provisions which were essential when made are today unnecessary or impractical. For example, the provision that a stairway shall have exterior light means that one room on each floor is eliminated to permit the installation of this stairway; yet it is probable that in any nine- or ten-story building the stairs have never been used by one of the tenants above the second floor, and it is unlikely that they have been used even there. In many cases tenants are ignorant of the very locations of the staircases, and there seems to be no practical reason for the continuance of the provision that they shall have outside light. Properly constructed fire towers are at least as safe without outside light, and the ventilation of such stairways can be assured by a provision in the code requiring them to be open to the air at top and bottom. Similar arrangements should be made in regard to toilets and bathrooms. The modern system of ventilation of inside bathrooms makes these perfectly sanitary, and placing them inside would in many cases save one or two rooms; these two provisions alone would add at least one room per apartment on any floor, decreasing the cost of construction per room about 10 per cent. On the other hand, those provisions of the tenement house code which apply especially to height, should, because of the transportation problem, be retained or even made more stringent. The tenement house law which prohibits more than 15 stories on a 100-foot street, and more than ten stories on a 60-foot street is certainly sufficient, and if profitable buildings cannot be built under these conditions, they should not be built at all.

An adequate and satisfactory solution of the housing problem does not, therefore, appear to be in sight, and it is the opinion of the writer at least that the state-aided buildings do not offer even a palliative measure. The reduction in the wages in the building trades would permit more economical housing, but it is doubtful if this is economically desirable, and practically its possibility is remote. The extension of transportation facilities to cheap land may temporarily relieve the situation, at least to some extent, but long rides in the crowded subways mean that the workers spend on trains in bad air and no light time that should be devoted to rest and recreation. Nor does there seem to be any possibility of providing adequate transit facilities except at a higher fare or by state aid, and state aid means always an aggravation of the conditions it is intended to relieve. Certain changes in the tenement house law may help, but a complete rewriting of the tenement house law to meet the needs of the city today would probably result in an increase in the cost of building rather than in the lowering of it. The one real solution seems to be the removal to places outside the city of all those industries which can possibly operate elsewhere. We have in this country a senseless admiration for size;—we want New York to be the largest city in the world. A less admirable standard of excellence could hardly be imagined. If we should want New York to be the most comfortable city in the world to live in, that in which every inhabitant has a maximum of light, and air, and play, the best food, and the most comfortable clothing, we should be heading toward a real ideal; but that ideal can be attained only by increasing the wages of the laborers, or by their removal to other districts in which lower wages will buy more. Since we here in New York are manufacturing most articles in competition with communities in which the prices are lower, a general increase in wages is hardly to be hoped for. The only solution of the problem appears to be in lessening the demand and not in increasing the supply.

The Proof of the Pudding

By C. STANLEY TAYLOR

NOT long ago there was brought forcibly to my attention the most convincing evidence I have yet encountered as to the direct business value of good architectural service. It was so sensible a tribute to modern practice and so indicative of a powerful trend which has marked the progress of building during the past few years, that it merits serious thought on the part of every architect.

There has been, and probably always will be, considerable discussion as to the economic value of architectural service. There has been some criticism of the architect as a business man. This has been due, in part, to the fact that some architects have designed buildings which have proved unsuccessful from the investment standpoint because of wasteful and inefficient planning, or because of the unwise specifying of materials and equipment which have not shown a reasonable length of useful life. However, the real question of the economic value of good architectural service is best answered by considering each annual quota of new buildings as a whole and interpreting the averages of improvement or retrogression. Where are the facts and figures to prove our belief that each year architects and engineers are rendering greater and more valuable service and developing a more important position in the economic structure of this country? To my mind this proof is to be found primarily in the ledgers of building owners and in the records of transactions in the field of building finance. This would be most convincing proof.

The convincing proof just mentioned developed at a luncheon meeting with the head of one of the largest real estate appraisal and mortgage financing organizations operating in this country. He was accompanied by a building expert whose function for that company is the analysis of specifications and the actual checking of the construction of large projects on which building and permanent loans are made. It was very interesting to learn from them not only the importance of efficient planning as a factor in building valuation, but also the actual attitude toward the specifying of good materials and equipment which should serve to give longer useful life to the buildings and, incidentally, to reduce materially the annual charges of depreciation and maintenance. We had just returned from a typical visit of inspection, covering an important building project which is now well under way, and we were well provided with concrete examples for the discussion which ensued. The information which developed, briefly expressed, was this: (1) That compared with the average building of 10 or 15 years ago, our modern commercial and institutional structures have had their estimated useful lives increased by at least 50 per cent. (2) That mortgage loans on such building operations are now safely extended over a considerably longer period of years with much less drastic amortization clauses. (3) That the annual depreciation or obsolescence factor for good buildings has been extended to cover a period of 70 years, where its average in times past was but from 40 to 50 years. (4) That maintenance and repair costs in proportion to gross income have shrunk materially in average experience. (5) That the actual architectural and engineering designing of modern buildings has so improved that there is relatively little danger of a building's becoming either æsthetically or mechanically old fashioned within the period of its useful life. This was certainly valuable evidence, coming from an organization which has observed building methods closely for many years. It indicates a tremendous improvement in methods of design and construction, and the important point is that, for this definite economic progress, the credit was given to architects and engineers who have created the demand for good materials and equipment. Full credit was also given to the manufacturing branch of the building industry, which has unhesitatingly met this demand by achieving and by maintaining that high standard of integrity and service which is reflected in the materials and equipment.

The profession lives today in an interesting era of new and daring expression. Restrictive conditions of land values, zoning laws, and building codes have, to a great extent, served an unexpected but valuable purpose by stimulating the inventive genius of the architect of today. The result is being shown in a constantly mounting number of structures of outstanding importance, many of which in design are uniquely adapted to their purposes. The eternal triangle in modern practice is formed by the interrelation of exterior design, of plan, and of specifications, all in their modern sense. Each must be considered as a primary factor of great importance. The exterior design must be thoroughly adapted to the environment and to local conditions; the plan must be completely efficient according to the functional demands of the building and conditions which affect the annual rental income; the specifications must call for the better types of materials and equipment, all of which may be expected to function efficiently during the life of the building. If any one of these is slighted, —and particularly that which has to do with the hidden parts of the building, such as structural members, piping, wiring and others similarly difficult to replace,—it is obvious that a weak link has been placed in a chain which would otherwise be strong.

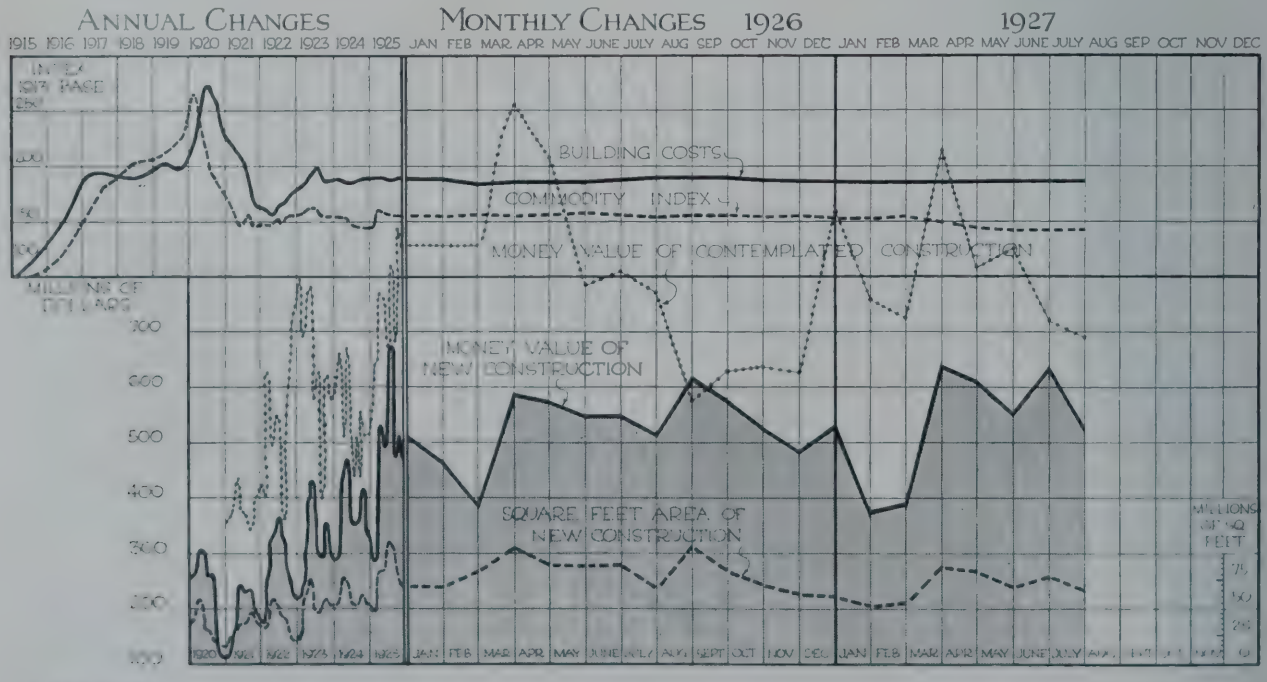
It is the architect's task, and often a difficult task, to "sell" his client the idea of protecting his original investment by the use of quality materials, making up for apparently additional cost by the savings made in reduced maintenance and depreciation costs and increases in the factors of area, utility and marketability.

THE BUILDING SITUATION

A MONTHLY REVIEW OF COSTS AND CONDITIONS

WITH the June contract figures, as reported by the F. W. Dodge Corporation, the total building activity of the first half of 1927 was brought up to equal the total for the earlier half of 1926. In view of this fact, it was interesting to see the recording of a July contract total larger than the figure for July of last year and indicating a continuation of confidence in the building industry, which may result in the 1927 totals' equaling those of last year. It is to be realized, however, that public works and utilities have contributed very largely this year to the maintenance of the contract total, and with this thought in mind it is quite probable that the end of this year will see a building total 10 or 12 per cent less than that of last year, all of which will be quite in accordance with THE ARCHITECTURAL FORUM'S forecast made in January, 1927. A significant factor in the June and July figures is a strong upturning of residential building, which has been gradually declining for some time and which in a sense is a leading indicator of actual conditions of prosperity in the building industry. To further strengthen the idea that the latter half of this year will not equal the same period of last year in the letting of actual building contracts, there are to be noted the facts that the filing of building permits has been less active for the past two or three months, and also that the filing of plans showed some decline in June as compared with June of last year, although the July filing was heavier than that of last year.

An examination of the chart given here shows an interesting continuation of contract-letting during the months of June and July as compared with June and July of 1926. While increased activity in engineering projects is primarily responsible for this, it is of course true that such projects present a large outlet for basic structural materials. The general economic conditions which sustain building activity are very good. Financial support for building operations is readily forthcoming, and in fact is quite liberal when plans are efficient and specifications are good. It is realized, of course, that many new buildings will soon enter a much more highly competitive market, and for this reason the building loan interests are more and more insisting on better architectural design and construction and equipment which will meet the tests of public favor and low maintenance and depreciation costs. It is probably for this reason that today a higher percentage of all building construction is being designed by architects than at any time in the past.

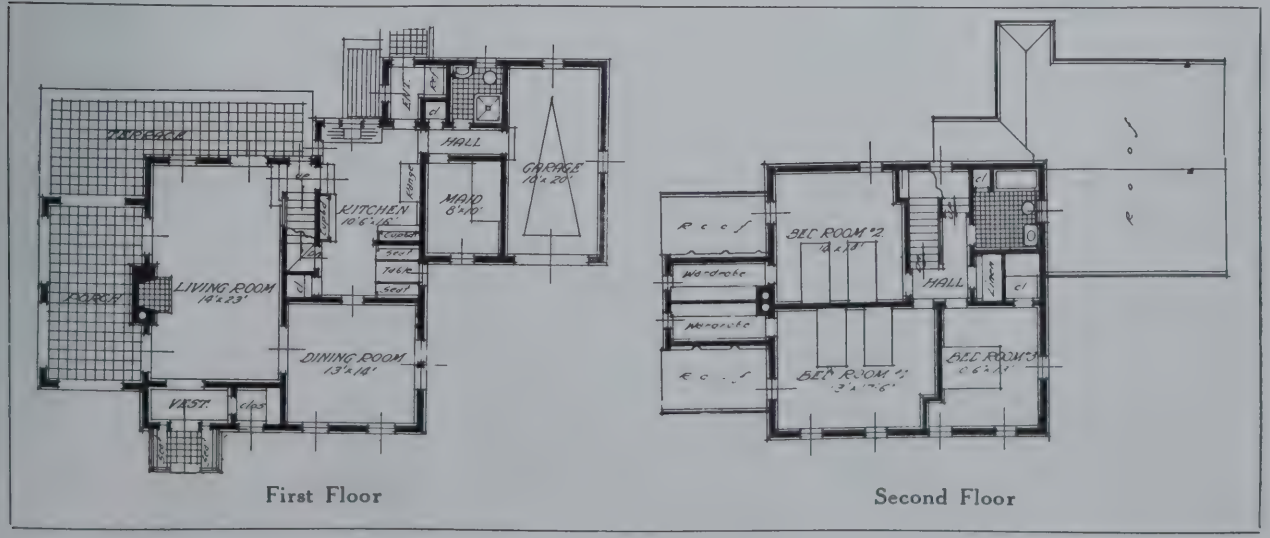


THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Corp., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the left of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the right of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined, first by the trend of building costs, and second, by the quality of construction.

SMALL BUILDINGS

SMALL HOUSE, COLONIAL FARM HOUSE STYLE, GREENWICH, CONN.
R. C. HUNTER & BRO., ARCHITECTS

THIS small house with attached garage carried out in wide siding painted white, with shutters and blinds painted green, possesses a hospitable, homelike effect, combined with convenience and compactness of the plan. The steep pitch of the roof of the main structure is repeated in the roof of the living porch. Opening off the small vestibule which separates the front door from the living room is a large



First Floor

Second Floor

FORUM SPECIFICATION AND DATA SHEET—198

Small House, Colonial Farm House Style, Greenwich, Conn.; R. C. Hunter & Bro., Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame, studs and wood sheathing, wood lath and plaster.

EXTERIOR MATERIALS:
Siding.

ROOF:
Wood shingles.

WINDOWS:
Double-hung wood sash.

FLOORS:
Oak.

HEATING:
Steam.

PLUMBING:
Enameled fixtures.

ELECTRICAL EQUIPMENT:
Lighting.

INTERIOR MILLWORK:
Whitewood and birch.

INTERIOR WALL FINISH:
Smooth, hard plaster.

INTERIOR DECORATIVE TREATMENT:
Walls painted and papered; floors stained.

APPROXIMATE CUBIC FOOTAGE:
35,000.

COST PER CUBIC FOOT:
44 cents.

YEAR OF COMPLETION:
1925.

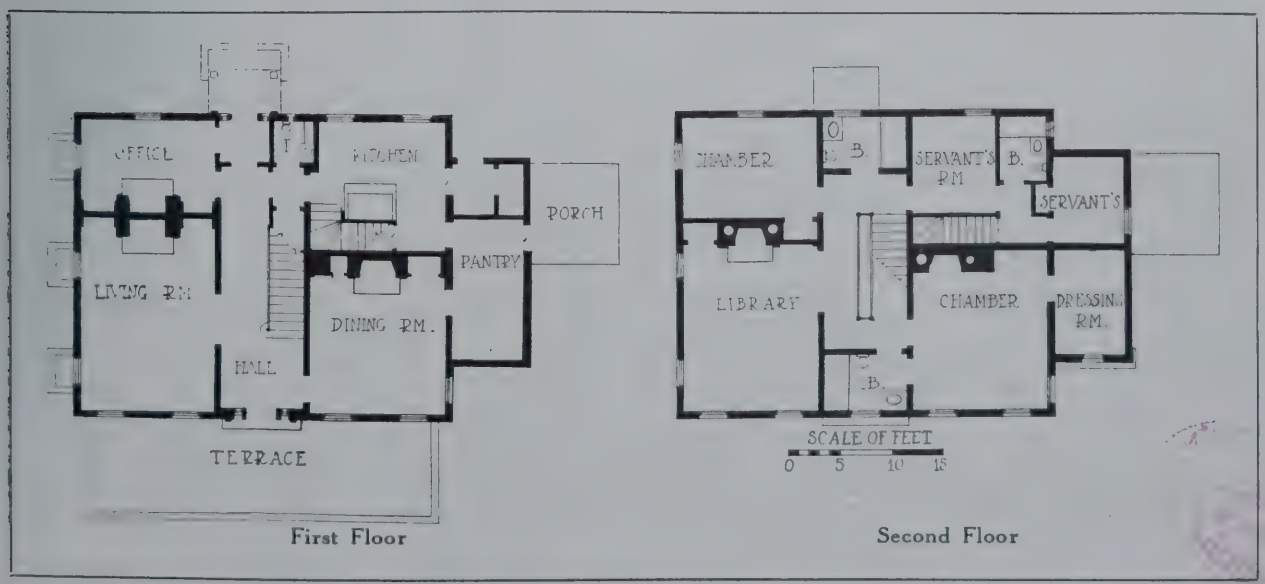
coat closet. The main stairway, which leads from one corner of the living room to the floor above, is equally accessible from the kitchen. The omission of a pantry between the kitchen and the dining room seems rather unusual in a house where a room and bath are provided for a servant. Where a small house is designed to be run and cared for entirely by the mistress, which is often the case, there is little necessity for having what is often called a "butler's" pantry, in valuable space.

Main Entrance

On the second floor are three masters' bedrooms, a bath, and ample closet space. The high pitch of the roof over the living porch makes it possible to introduce two large wardrobe closets opening off the two principal bedrooms. The arrangement of four windows across the front of the second story unfortunately necessitates having a jog in the wall between the two front bedrooms, and another jog is required in the rear bedroom to obtain headroom for the stairway where it turns down to the living room. The living room and dining room, however, are pleasantly rectangular and devoid of all breaks and jogs. The exterior of this small house shows that consideration and study have been spent on the location, scale and proportioning of the window openings and other details.

HOUSE OF PAUL DALY, ESQ., SOUTHPORT, CONN.
ROBERT J. REILEY, ARCHITECT

ALTHOUGH there are certain details and characteristics common to all farm houses built between 1730 and 1800, simplicity and refinement of detail are among the most noticeable; at the same time, a lack of symmetry in the exterior design, such as is found in this house at Southport, is not unusual. The picket fence is frequently found shutting off the front yard of the farm house itself from either a passing highroad or an entrance lane. These fences in many instances enclose the more or less formal flower garden, protecting it from stray dogs and cattle. The detail of this picket fence and ornamental gateway is attractive and unusual. The size and scale of the windows and the window panes have been successfully studied out. From the point of view of design, the front elevation might perhaps possess greater dignity and repose had one instead of two windows been used upon the lower floor at the left of the front door. This is true also of the two chimneys, which are unfortunately and unevenly placed.



FORUM SPECIFICATION AND DATA SHEET—199

House of Paul Daly, Esq., Southport, Conn.; Robert J. Reiley, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Wood.

ROOF:
Shingles.

WINDOWS:
Double-hung.

FLOORS:
Oak and pine.

HEATING:
Steam and fireplaces.

INTERIOR WALL FINISH:
Finished plaster and sand-finished plaster.

INTERIOR DECORATIVE TREATMENT:
Sand-finished plaster and wallpaper.

APPROXIMATE CUBIC FOOTAGE:
36,000.

COST PER CUBIC FOOT:
49 cents.

YEAR OF COMPLETION:
1925.

Inside chimneys have the advantage of providing spaces for closets and bookcases. Where a house is quite small, exterior chimneys make possible more area in the rooms and usually give a pleasing balance to the exterior design. Exterior chimneys if built of special brick, or even of common brick painted white, cost more than interior chimneys, which can be built of the commonest sort of brick and concealed behind the plaster walls. The delicacy of detail found in this entrance porch is repeated in the service porch, which opens out from the spacious pantry. As in most Colonial farm houses, the main hall runs the entire depth of the house. Here the garden front is more formal and severe in character than the entrance front, although the same charm and refinement of detail are found in both of this building's facades.

The house is well planned, showing no waste space or ugly angles. Each of the four principal rooms on the first floor is perfectly rectangular, and the fireplaces, windows and doors are located symmetrically. This unusually well planned, convenient and comfortable house is sufficiently deep to permit of a small office being located directly back of the living room. This is an excellent arrangement for a house owned by a physician, lawyer, or farmer, as it gives the head of the house a room which is entirely for his own use.

Main Entrance

Garden Front

HOUSE OF H. E. PETTEE, ESQ., SARATOGA SPRINGS, N. Y.
HOPKINS & DENTZ, ARCHITECTS

First Floor

Second Floor

FORUM SPECIFICATION AND DATA SHEET—200

House of H. E. Pettee, Esq., Saratoga Springs, N. Y.; Hopkins & Dentz, Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Random width clapboards.

ROOF:
Shingles.

WINDOWS:
Double-hung.

FLOORS:
Oak.

HEATING:
Hot water.

INTERIOR MILLWORK:
White pine.

INTERIOR WALL FINISH:
Plaster, painted.

APPROXIMATE CUBIC FOOTAGE:
71,433.

NO more successful use of the Colonial style could be found than in this house at Saratoga Tall elms and terraced lawns provide a perfect setting for this delightful, old time, white painted building, relieved by its green shutters and blinds. Except for the enclosed porch at either end of the main house, it could easily be imagined that this is really an old homestead which has been renovated and restored. The unbroken roof and the end chimneys add much to the simplicity and balance of the design. The entrance porch, with its delicacy and refinement, might well have been found in Salem or Portsmouth. Although the end chimneys prevent windows' centering in the gable ends of the house, a better balance might have been achieved had quarter-round instead of oblong windows been placed at the sides of the chimneys in the gable ends, windows with or without blinds.

Street Entrance

The street facade is appropriately designed with greater dignity and severity than the garden front, which faces a deep lawn flanked by flower gardens. As the rear of the house, rather than the front, is intended for the use of the family, a fine two-story porch is here introduced to further express the Colonial character of the design. By screening in the upper part of this porch, outdoor sleeping quarters are provided. The plan of the first floor shows a balanced arrangement of living and dining rooms divided by a spacious hall extending through the house. Off the dining room is located a breakfast porch, similar in design and width to the living porch at the opposite end of the house. A large kitchen, store closet and service porch occupy the first floor of the ell. On the second floor two guest rooms, an owner's room of unusual size, two masters' baths, and two servants' rooms and bath are located. The plans are in excellent agreement with the exterior.

HOUSE OF WILLIAM H. DIXON, ESQ., ST. JAMES, N. Y.
PEABODY, WILSON & BROWN, ARCHITECTS

ALTHOUGH larger and more generously planned than most of the houses shown in this group of small buildings, this country house overlooking Long Island Sound possesses the same delightful quaintness and charming simplicity found in the smaller examples of modern Colonial farm houses. The use of extra large shingles, laid about 12 inches to the weather, gives an interesting character to the white painted walls. Entrance doors and windows, which are important features in a farm house design, are here detailed, proportioned, and spaced with obvious care and study. The entrance porches as well as the living porch show much appreciation of early American precedent, as do also the dormer windows.

First and Second Floor Plans

Garden Front

One End of Living Room

FORUM SPECIFICATION AND DATA SHEET—201

House of William H. Dixon, Esq., St. James, N. Y.; Peabody, Wilson & Brown, Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Wood frame.

EXTERIOR MATERIALS:
Shingles.

ROOF:
Shingles.

WINDOWS:
Double-hung—of wood.

FLOORS:
Maple.

HEATING:
Low-pressure steam; one-pipe system.

INTERIOR WALL FINISH:
Living room, hand-patted plaster and oak ceiling beams; study or library, white pine book cases, hand-patted plaster, oak ceiling beams; dining room, wood paneling to dado.

APPROXIMATE CUBIC FOOTAGE:
52,780.

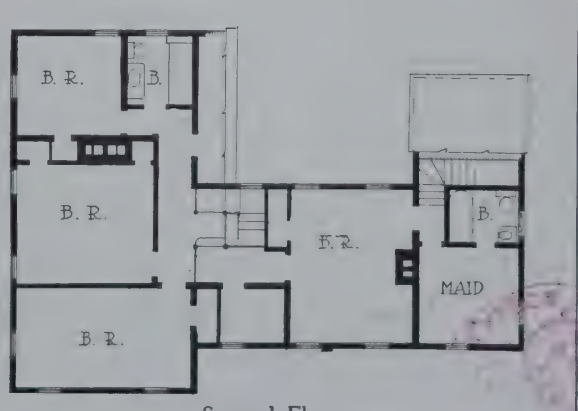
Living Room Fireplace

ENTRANCE, COTTAGE ON ESTATE OF GERHARD M. DAHL, ESQ., SMITHTOWN, N. Y.
PEABODY, WILSON & BROWN, ARCHITECTS

COTTAGE ON ESTATE OF GERHARD M. DAHL, ESQ., SMITHTOWN, N. Y.
PEABODY, WILSON & BROWN, ARCHITECTS

AS much care and pains are taken today in the designing of the various farm buildings as with the mansion house itself. Where 25 years ago the man in charge of a country estate was usually designated the "farmer," today he is called the "superintendent," and he is usually a graduate of some well known school of agriculture. This particular superintendent's cottage possesses a great deal of simple charm and a homelike quality not always easy to obtain. The house, which is rather larger than the usual abode of a resident farmer or superintendent, is refreshingly different in plan from that of the usual small country house. It is divided by a center entrance hall which connects the dining room and service wing with the living room and office in the principal part of the house. Two steps down from the floor level of the dining room make possible a higher ceiling in the living room, which is an advantage in so large a room. The office, which is located at one corner of this floor, is well supplied with closets for supplies and coats, and has an easily accessible lavatory. An outside door leads from this office directly

First Floor



Second Floor

FORUM SPECIFICATION AND DATA SHEET—202

Cottage on Estate of Gerhard M. Dahl, Smithtown, N. Y.; Peabody, Wilson & Brown, Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Wood frame.

EXTERIOR MATERIALS:
Clapboards.

ROOF:
Wood shingles.

WINDOWS:
Double-hung, of wood.

FLOORS:
Living room of oak; rest of maple.

HEATING:
Steam heat.

INTERIOR MILLWORK:
Painted trim.

INTERIOR WALL FINISH:
Plaster.

APPROXIMATE CUBIC FOOTAGE:
35,000.

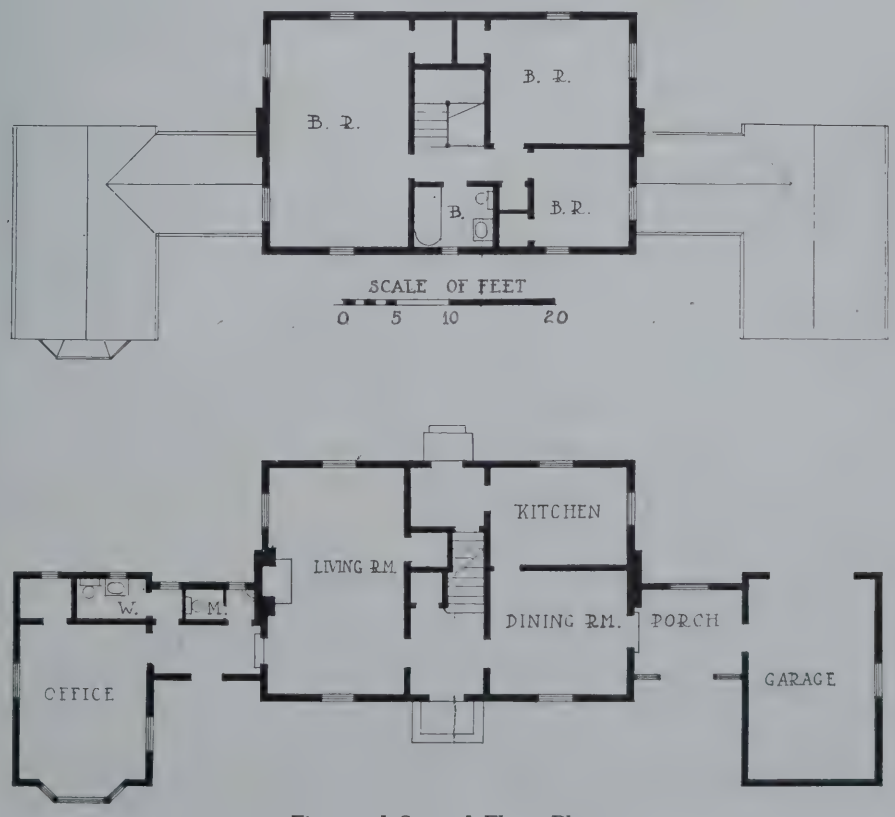
onto one of the main driveways of the estate. Although a so-called "story-and-a-half" house, the second story walls are sufficiently high before they meet the sloping roof line to provide excellent wall space and head-room in the second story. Four masters' bedrooms, two baths, and a maid's room occupy the second floor, making the house convenient and comfortable for the use of the superintendent.

Entrance Gate

Service Entrance

LODGE "HARBOR ACRES," PORT WASHINGTON, N. Y.
AYMAR EMBURY II, ARCHITECT

THERE is a suggestion of the early Connecticut farm house in this attractive lodge. The use of wide matched siding for the first story, relieved by wood quoins at the entrance door and at the corners, provides a pleasant contrast with the white painted shingles of the second story. The high pitched roof, broken by two low dormer windows on the front and balanced by the tall end chimneys, makes a delightful composition. Importance is given to the main house by the addition of two low wings. One



First and Second Floor Plans

FORUM SPECIFICATION AND DATA SHEET—203

Lodge, "Harbor Acres," Port Washington, N. Y.; Aymar Embury II, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Shingles.

ROOF:
Shingles.

WINDOWS:
Steel casements.

FLOORS:
Oak.

HEATING:
Steam.

INTERIOR MILLWORK:
Special detail trim; base, chair rail and cornices in living room, dining room and office.

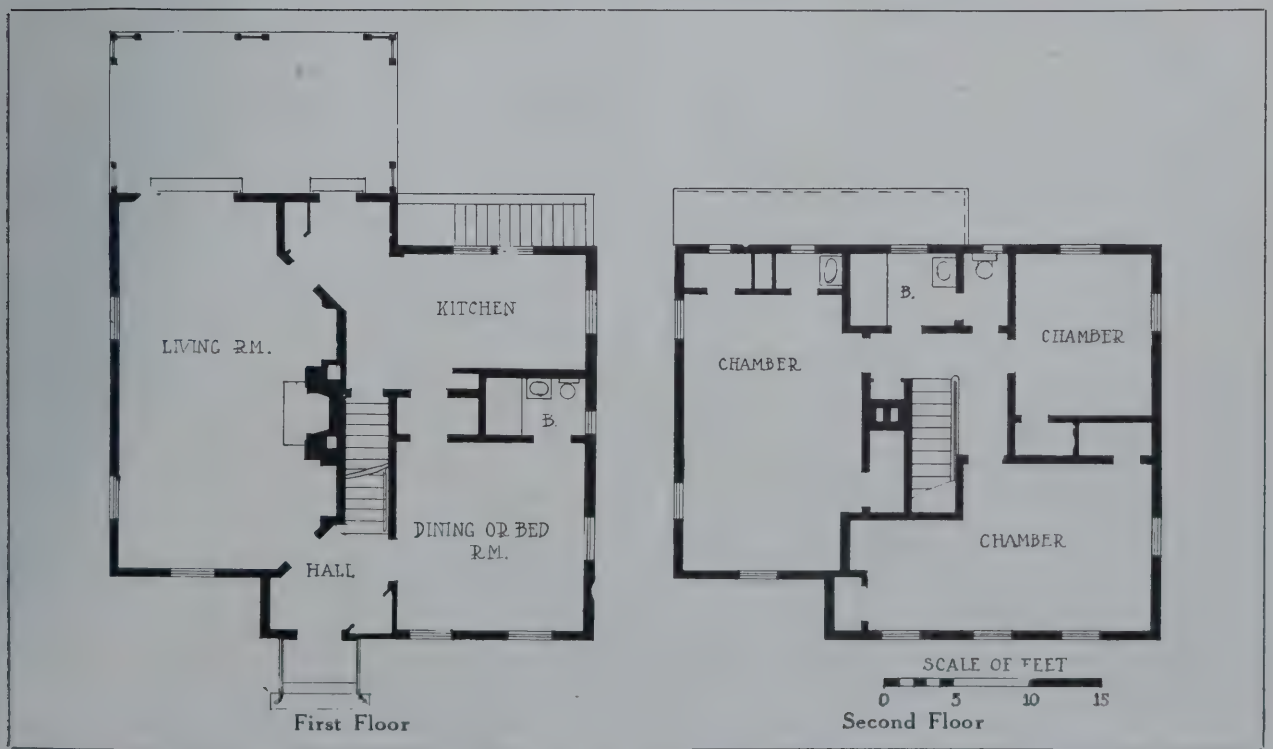
INTERIOR WALL FINISH:
Sand finish.

INTERIOR DECORATIVE TREATMENT:
Flat oil paint.

of these wings contains the office of the overseer or superintendent, and the other a one-car garage. Attention is called to the scale and detail of the bay window of the office building, which is both a utilitarian and a decorative feature. The planting about this house is unusually well done, as is also the diagonal latticed treatment of the front end of the garage. The plan of the first floor shows a large living room occupying one end and a dining room and kitchen the other. Closets and stairways to the second floor and cellar, as well as a rear hall opening off the kitchen, occupy the center of this floor. From the living room a passageway or entry connects the office wing with the main house and provides an outside entrance to the office. The second floor of the main part of the structure has three bedrooms, a bathroom, and four large closets. This is an ideal small house plan, providing maximum area.

View from Entrance Gates

HOUSE OF A. V. BARTO, ESQ., BRONXVILLE, N. Y.
GEORGE ROGER THOMPSON, ARCHITECT



FORUM SPECIFICATION AND DATA SHEET—204

House of A. V. Barto, Esq., Bronxville, N. Y.; George Roger Thompson, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Clapboards.

ROOF:
Shingles.

WINDOWS:
Double-hung; white pine.

FLOORS:
Oak.

HEATING:
Hot air.

ELECTRICAL EQUIPMENT:
Dishwasher.

INTERIOR MILLWORK:
White pine.

INTERIOR WALL FINISH:
Hard white finished plaster.

INTERIOR DECORATIVE TREATMENT:
Painted walls; paper in hall.

APPROXIMATE CUBIC FOOTAGE:
29,000.

COST PER CUBIC FOOT:
50 cents.

DATE OF COMPLETION:
November 1, 1924.

Main Entrance

IT is always interesting as well as pleasant to find some variation in the prevailing style of modern Colonial farm houses. In this house at Bronxville the architect has succeeded in catching the spirit of the period from 1830 to 1850, sometimes termed, because of some of its more pretentious examples of architecture, that of the "Greek Revival." The detail of the entrance door, however, is reminiscent of Colonial work in New England, as are also the quoins at the corners of the building. The suggestion of the Greek Revival is found in the pediment treatment of the roof gable as well as in the proportions of the windows. It is rather unfortunate that the plan was such as to make it impossible to center the front door directly under the window above it. Absolute balance and symmetry invariably characterize designs in the Greek Revival style, but in this instance the freedom exhibited in both plan and elevation is rather welcome. There certainly is an atmosphere of cheerful hospitality about this house which would prompt one to stop and look at it a second time. It represents an architectural type which might well be more used.

INTERIOR ARCHITECTURE

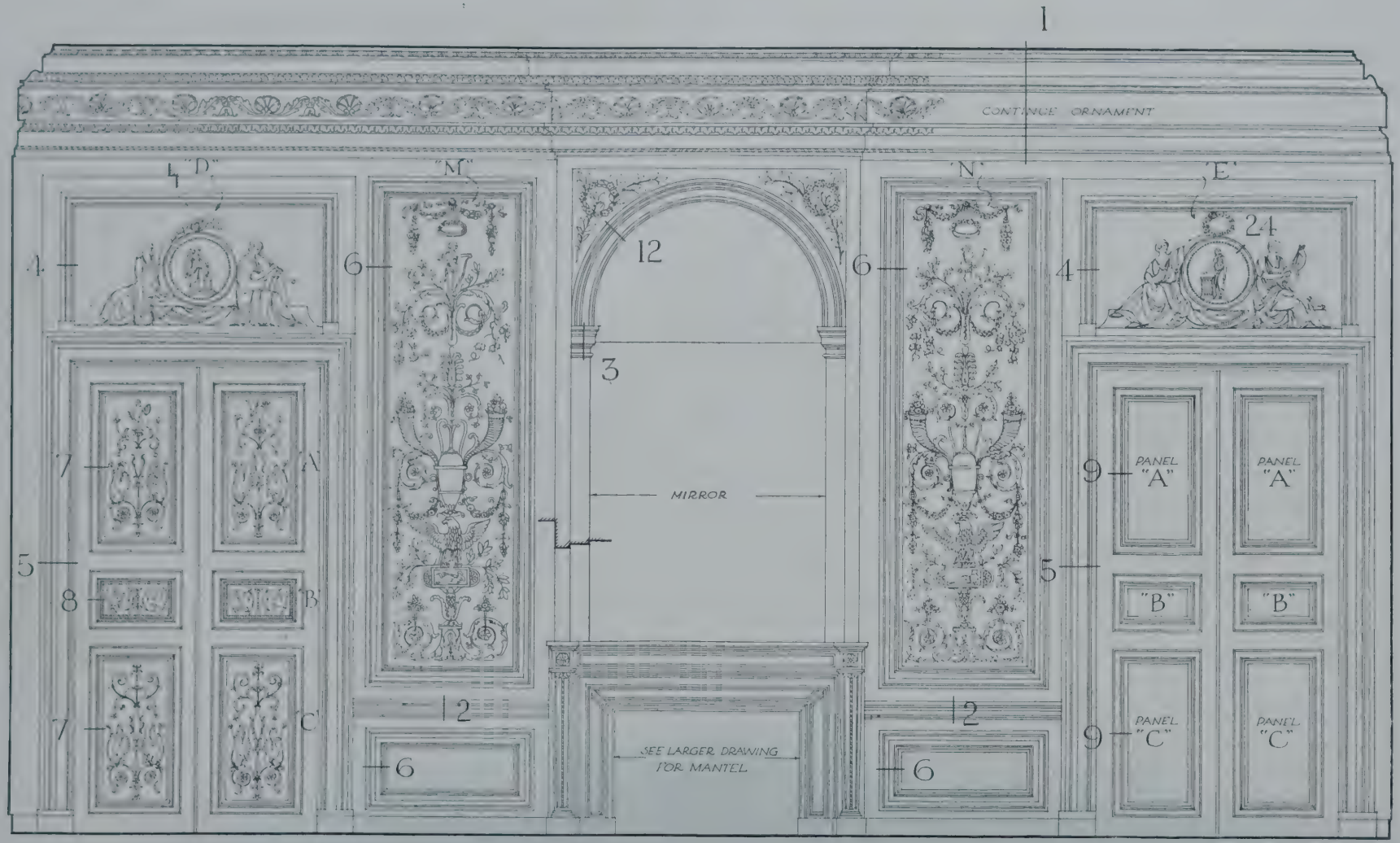
Salon, Hotel de Chaulnes, Paris

By C. HAMILTON PRESTON

AGAIN the subject of this series is one of the remarkable rooms to be found in the Hotel de Chaulnes, Place de Vosges, Paris. This room, however, differs completely from the others and is by far the most elaborate. Either from a photograph or from a drawing one might consider this interior over-elaborate, but such is not the case in actuality. The proportion and scale of the room as well as the disposition and delicacy of the ornament combine to give an effect verging on restraint. The keynote of the design is given by the large and well proportioned arched mirror over the mantel, repeated on the two walls adjoining, while the opposite wall is exactly balanced by a mirrored door of the same proportions, deeply recessed. On the sides of these arched mirrors there occur exquisitely designed and executed panels in plaster after the manner of Cauvet; in fact, it is thought that these may be the work of the master himself. Carvings of rare delicacy occur in all the panels of the doors, the carving, thus adding a certain unity to the room.

The work in this room seems to be of two periods. Architraves, cornice and panel moulds are bold and heavy and evidently of the Louis XIV period, while all the ornament in plaster is delicate and distinctly Louis XVI in feeling. The centerpiece in the ceiling, from which the chandelier is suspended, is of the rarest beauty and was probably an addition during the latter part of the Louis XVI period, just before the style merged into that of the Directoire. The mantel, executed in white marble, is unusually good in design and well scaled to the room. The plaster and the woodwork are oyster-shell white. At the present time this room has been decorated in a most perfect manner, so that its architectural values have been greatly enhanced. A beautiful crystal chandelier hangs from the ceiling. Appliques of great beauty are properly placed on the walls, and the hangings, furniture and upholsterings are of the finest the period affords. All this is reflected many times over in the four huge mirrors, and this together with the beauty of the sculptured panels gives one an unforgettable picture of one of the most charming rooms of this period to be found in all Paris.

Salon, Hotel de Chaulnes, Paris



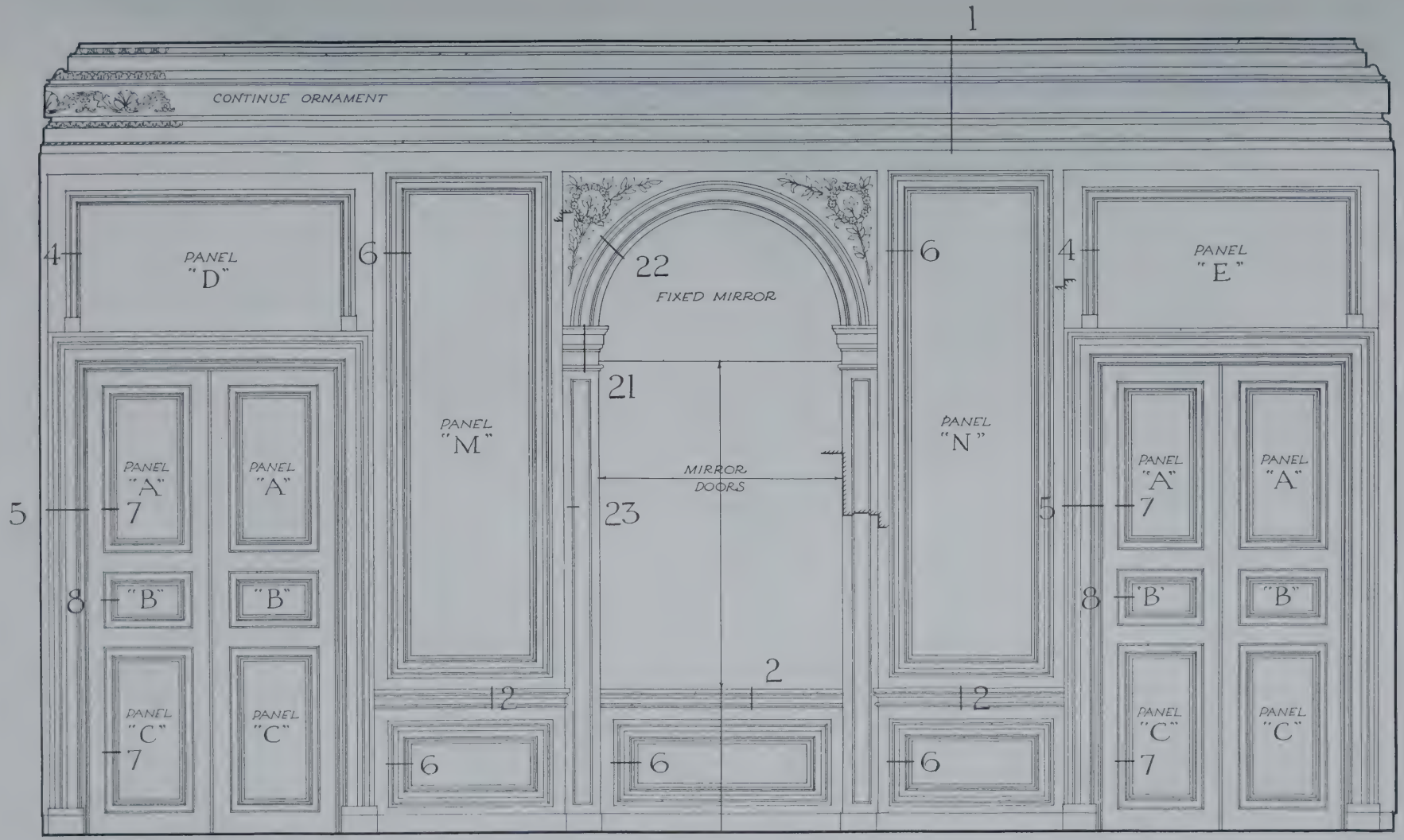
ELEVATION A~A

SALON

HOTEL DE CHAULNES

PARIS

Scale $\frac{3}{8}$" = 1 Foot



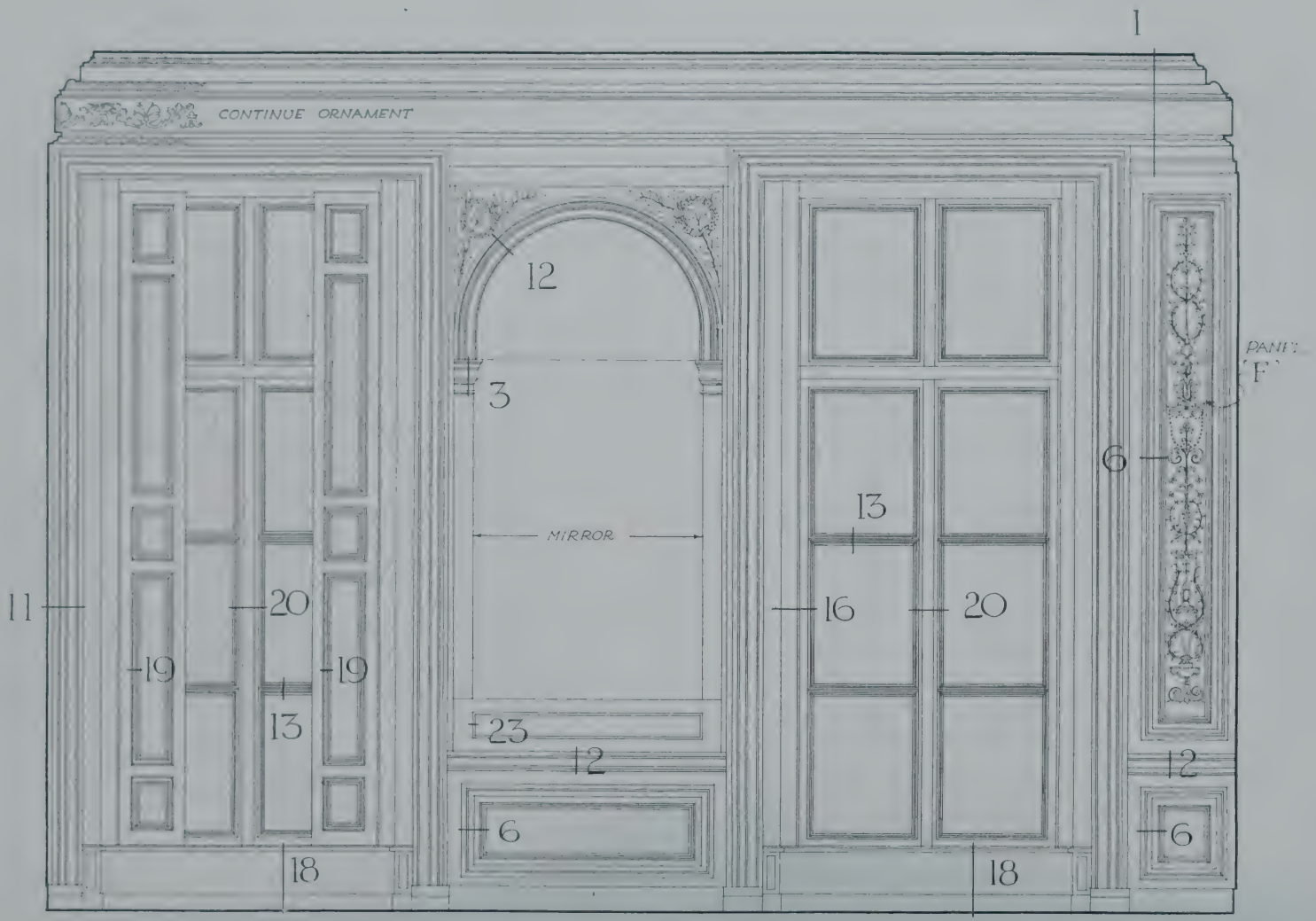
ELEVATION C~C

SALON

HOTEL DE CHAULNES

PARIS

Scale $\frac{3}{8}$" = 1 Foot



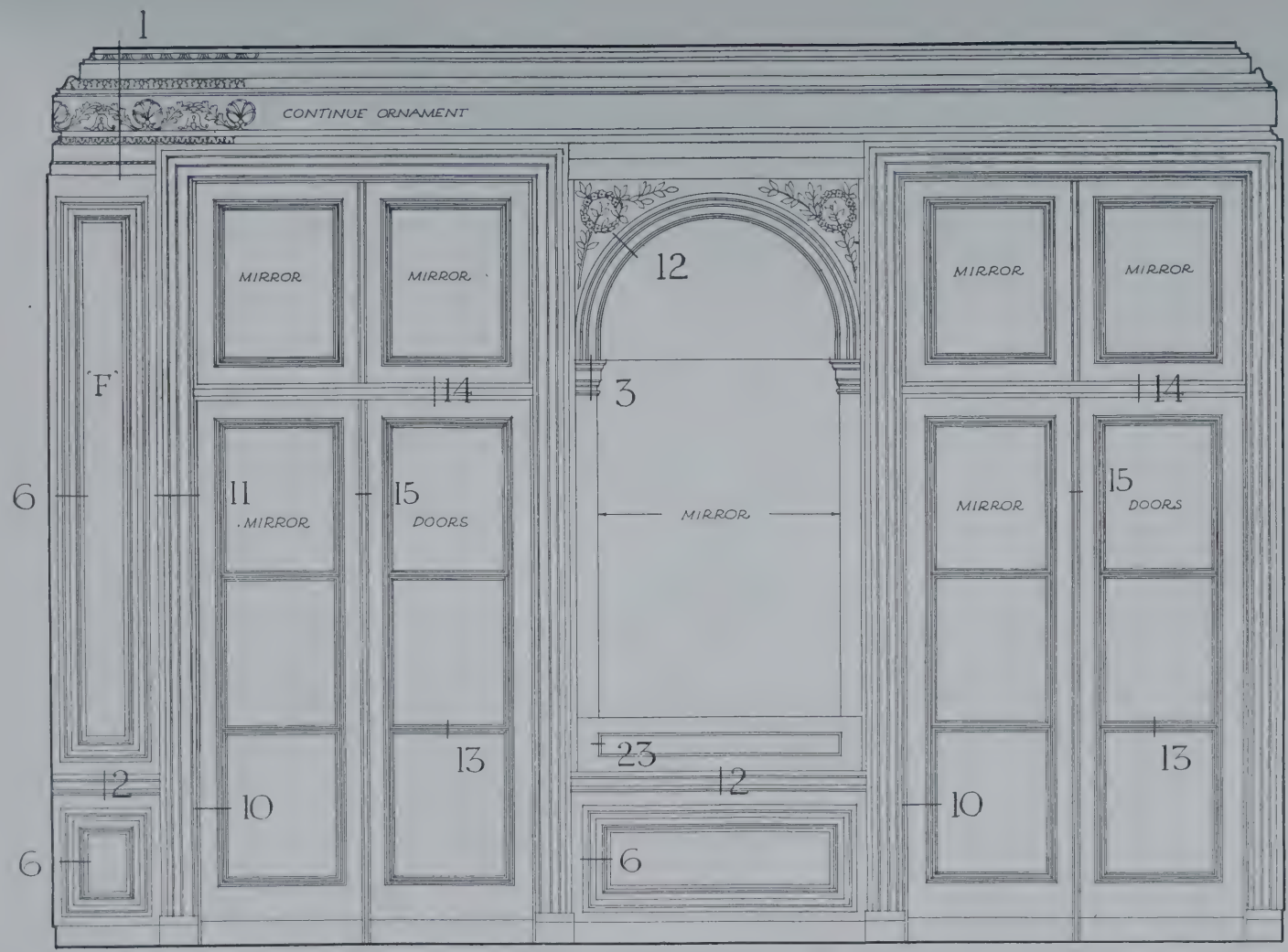
ELEVATION D~D

SALON

HOTEL DE CHAULNES

PARIS

Scale $\frac{3}{8}$" = 1 Foot



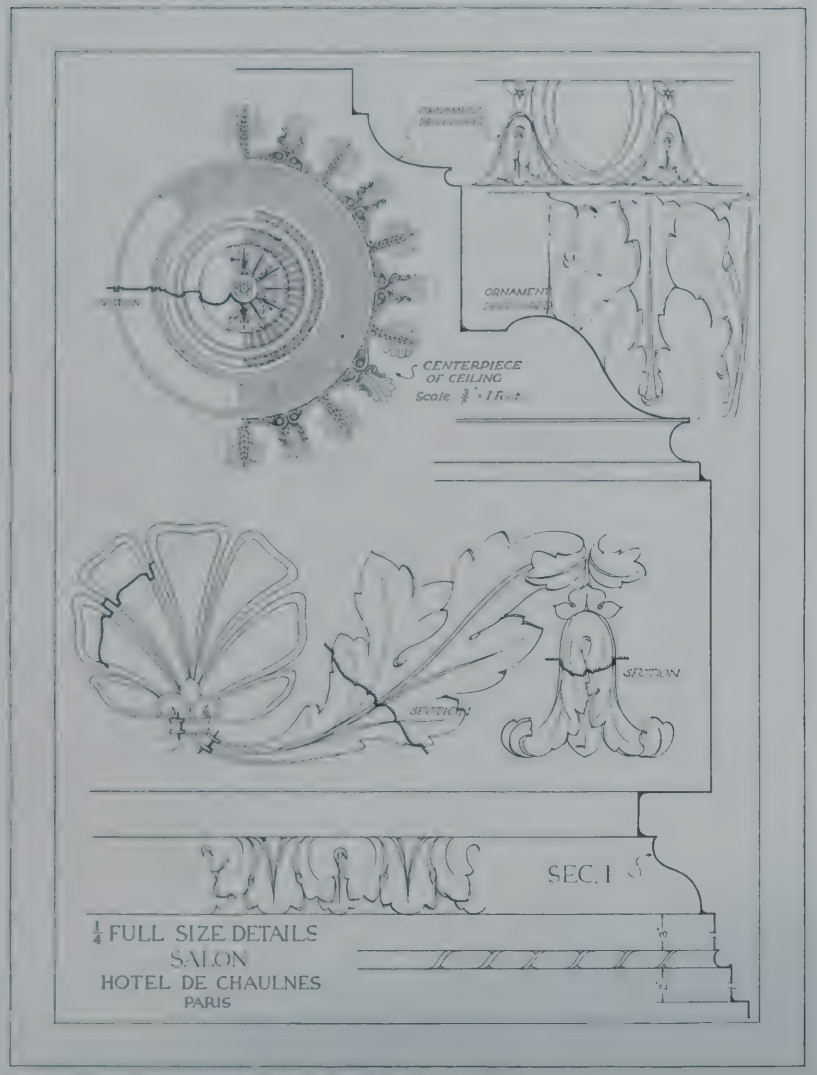
ELEVATION B~B

SALON

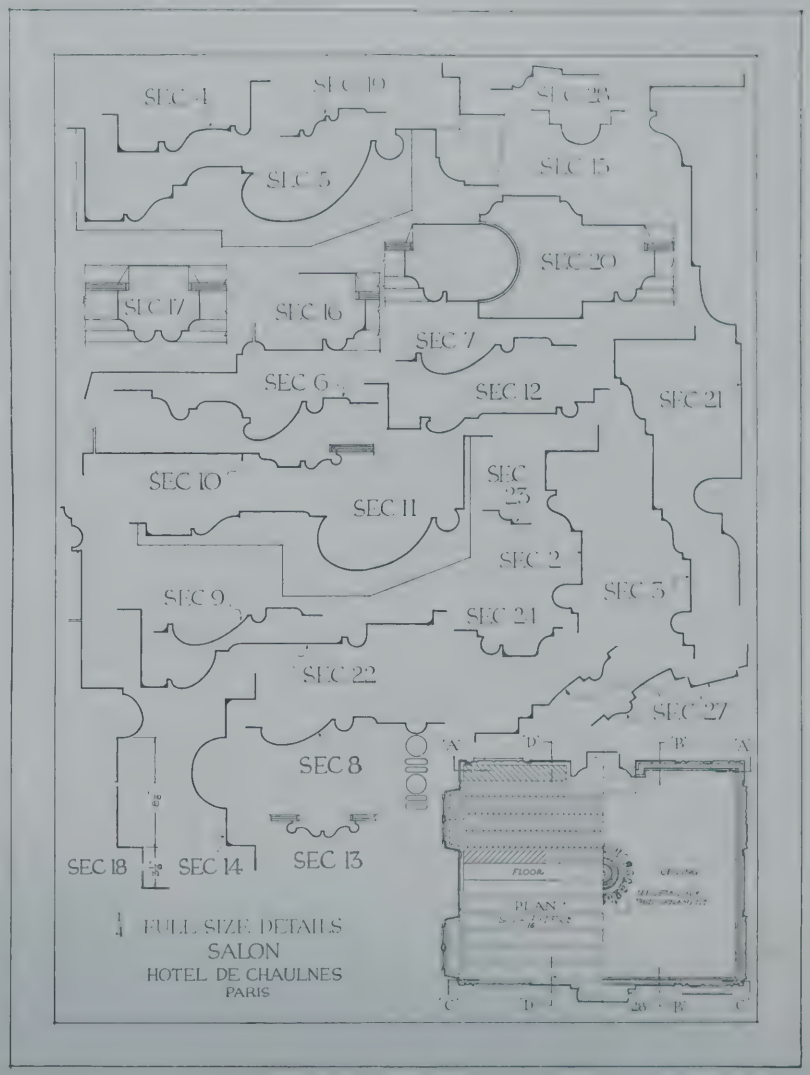
HOTEL DE CHAULNES

PARIS

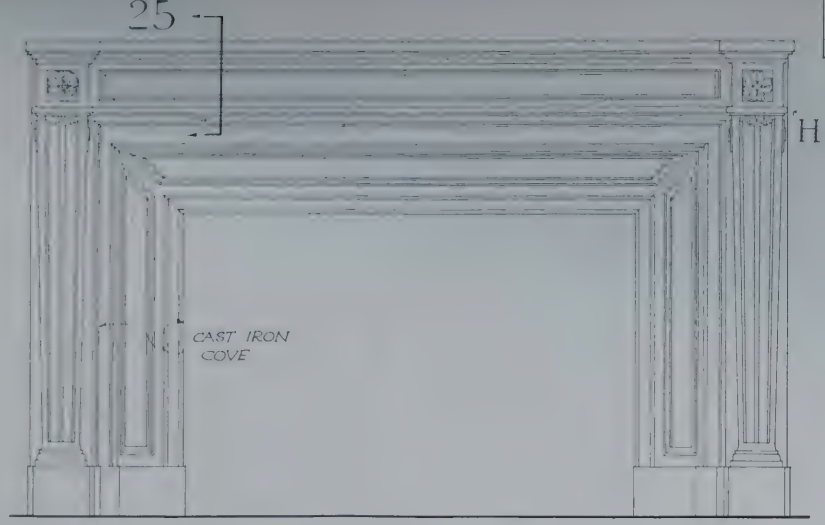
Scale $\frac{3}{8}$" = 1 Foot



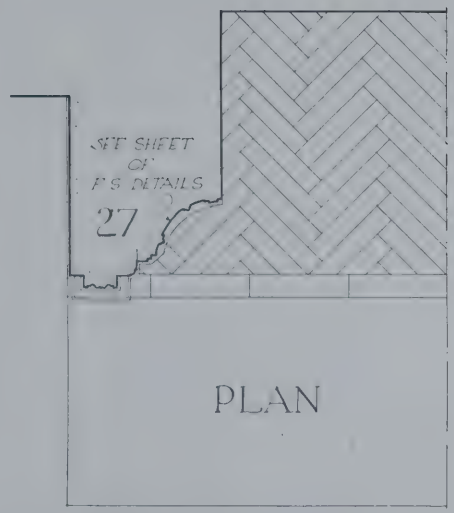
¼ FULL SIZE DETAILS
SALON
HOTEL DE CHAULNES
PARIS



¼ FULL SIZE DETAILS
SALON
HOTEL DE CHAULNES
PARIS



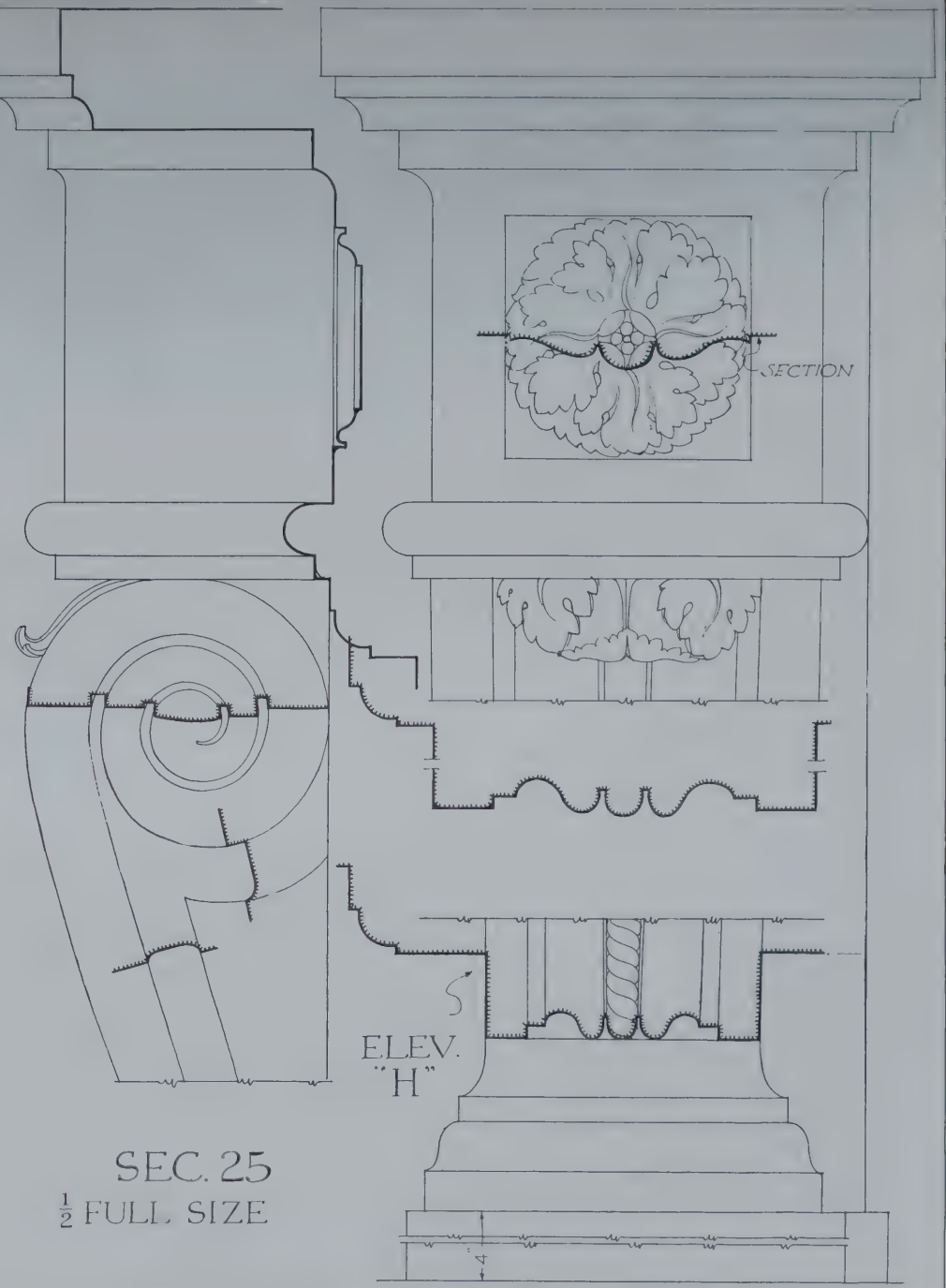
ELEVATION OF MANTEL



PLAN

SIDE

Scale $\frac{3}{4}$" = 1 Foot



SEC. 25

$\frac{1}{2}$ FULL SIZE

SALON
HOTEL DE CHAULNES
PARIS

SALON, HOTEL DE CHAULNES, PARIS

THE ARCHITECTURAL FORUM

NOVEMBER

1927

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BOOK DEPARTMENT

The Architect in History

A Review by HAROLD D. EBERLEIN

THAT often nebulous and elusive personality, the architect in history, has at last been clothed with flesh and blood so that the reader who has neither time nor opportunity to delve into sources not always readily available can visualize the men who practiced the great art of building in the past and brought it to its present stage of advancement. Furthermore, it is now easy to trace the evolution of the architect's professional status, the means by which he gained his training, and the manner in which he has conducted his practice since the Middle Ages, although the story is carried back to an earlier period, to which only fragmentary allusions exist.

In his careful analysis of the whole situation, Mr. Briggs begins with the Egyptian architects and throws some interesting light on the position they occupied. For example, Sennemut, an architect of obelisks in Queen Hatshepowet's expedition, was her chief architect. Incidentally he supervised her daughter's education, and caused himself to be described in an inscription as "Pasha, Count, Royal Seal-bearer, Sole Companion, Chief of the Prophets of Monthu in Armant, Controller of the Fields, Gardens and Cattle of Amun. . . . I was the greatest of the great in the whole land; one who had audience alone in the Privy Council. I was a real favorite of the King; foreman of foremen; superior of the great; one to whom the affairs of Egypt were reported. . . . I was a noble who was obeyed; I had access to the writings of the prophets; there was nothing which I did not know concerning what had happened since the beginning." The art of self-advertisement, evidently, was known to the ancient Egyptian architects as well as to some of their successors of the present generation in other lands!

Passing rapidly through the great period of Greek architecture with a comprehensive notice of the evidences relative to the Greek architects, their position, their use of models and plans and their essays in town planning, the author succinctly reviews the situation in the Roman Empire, giving due attention, of course, to an unbiased estimate of that "canonized policeman," Vitruvius. Every available reference to the Roman architect's position, labors, methods of procedure and emoluments is either quoted or the source indicated, so that our mental picture is as clear as it can possibly be made. The Byzantine and early Romanesque periods are treated in the same enlightening manner. By far the greater part of the volume, however, is devoted to the period or periods from the later Middle Ages down to the beginning of the nineteenth century, during which time authentic records become increasingly complete, so that there is ample ground for the basis of indubitable conclusions. The four final chapters, which make up rather more than half of the volume, are devoted respectively to the Renaissance in Italy, the Renaissance in France, the Renaissance in England, and also to the Nineteenth Century in England.

It is worth noting that Mr. Briggs very effectually disposes of certain widely accepted fallacies regarding the personality of the architect, his position, and his methods of work during the Middle Ages in England and France. To name these nine popular delusions, for many of which Mr. Ruskin's writings and the romantic effusions of others like him are largely responsible, they are that (1) there was no independent directing personage or "architect" in the Middle Ages; (2) that the controlling power was exercised by an artisan, the "master-mason," not by an educated professional man; (3) that no preliminary plans or working drawings were used; (4) that design was purely traditional, no ideas being borrowed from buildings of other styles or countries; (5) that the masons worked for the glory of God rather than for mere bread and butter; (6) that the master-mason lived in the building, not undertaking other work in the way that a modern architect runs a "practice"; (7) that he learned his trade at a bench, not in an office or a school; (8) that he was usually a monk, or a lay brother attached to a monastery; (9) and that he gloried in his anonymity. Mr. Briggs takes up one of these fallacies after another and systematically riddles it, quoting the sources from which he draws his conclusions, which are perfectly sane and inescapable. Apropos of his contentions, he presents us with a fascinating picture of Villard de Honnecourt, a thirteenth century French architect who traveled extensively in search of architectural inspiration and left an architectural sketch book full of invaluable material and with annotations that leave no doubt respecting its purpose and the procedure of the maker. Here is an instance: Under the sketch of a window, Villard de Honnecourt has written: "Here is one of the windows of Rheims Cathedral, such as are placed in each bay of the nave between each pair of pillars. I was proceeding to Hungary on professional business when I drew this, because it pleased me best of all."

When the author has made such an exhaustive and fascinating study of the early ages, it is easy to understand how thorough and lucid are his later chapters, for which he has had an infinitely greater amount of material to draw upon. All of this material he has digested in the same painstaking and logical manner. The volume, as we should expect from Mr. Briggs, shows ripe scholarship combined with sound common sense, and it will prove a valuable addition to the library of any architect who does not confine his mental exercise merely to looking at the illustrations of what other architects have done.

THE ARCHITECT IN HISTORY. By Martin S. Briggs. 365 pp., 5 x 7 ins. Price $3.75. Oxford University Press, New York.

MALLORCA THE MAGNIFICENT. By Nina Larrey Duryea. 280 pp., 5½ x 8 ins. Price $3. The Century Company, New York.

FOR those to whom the joys of travel are denied there exist at least the books on travel, so written for the most part that they satisfy at least some part of that longing for what is "different" that comes to many in this restless age. As the spirit of Progress extends its conquest over the world, first one land and then another surrender, and it is only the inaccessible, out-of-the-way spots which retain their primitive interest; so in Japan and in China, except in their more remote corners, and so it seems in lands which lie even farther removed from Civilization's relentless line of march through the world.

The Balearic Isles lie toward the western end of the Mediterranean, not far from the Spanish coast. Belonging to Spain, they have seen the rise, progress, and fall of many civilizations,—Greek, Roman, Visigoth, and Moorish,—and each has left something of its imprint upon these islands which lie "like a fallen sector of Paradise on the pavement of azure sea." Mallorca is the largest of the group, and this work describes and illustrates much of what it possesses of interest for the traveler,—particularly for the traveler who has an eye for the architectural. Here exist old cathedrals, convents, churches and palaces, to say nothing of old buildings of other kinds, which are unmistakably Spanish and which yet possess a subtle quality which is to be found nowhere in Spain, possessing likewise a vast wealth of tradition and romance which belongs to these islands alone. The Balearic Islands form, in fact, a little world to themselves, and their isolation and remoteness have been the means of keeping them from the encroachments and depredations of Progress to which reference was made.

How long isolation and remoteness may preserve the Balearic Islands no one can tell. In his introduction Mr. Cram suggests that they have safeguarded many a place. "Almost this is not so in Mallorca; almost, but not quite, for the spirit of Advancement is moving on the face of waters that already are troubled, and one can mark approximately the course that has its end in oblivion. The first signs showed many centuries ago when, 'the red fool-fury,' of republicanism burst over all the Spanish lands, and even here in this sequestered isle mobs were found to wreck churches, and generally destroy good that evil might come. It was then that the Dominican monastery in Palma, the first notable work of the great master builder Jaime Fabre (who was later to build his masterpiece, Barcelona Cathedral) was utterly destroyed, its site now being more profitably occupied by banking houses and a princely club. A little later the demolition of the mighty ramparts of the walled town was taken in hand, and only a noble fragment now remains. To the south the four-mile beach is degraded by a mean type of cheap seashore hotels and blatant 'villas.' The prosperous city spills out through the rents in its once guarding walls, in the regular type of yellow stucco suburb, while the fields and orchards of almond and olive between Palma and Terreno are scored by the harsh cuttings of new streets and adorned with the billboards of 'realtors.' Sad and disdainful, in the midst of these signs of progress, stands an old, abandoned mansion, half fortress, half manor house, its great vaulted tower on Moorish foundations that were there, though with another superstructure, when *el conquistador* held his siege against the Moslem capital, — already there before Columbus launched his ships from Palos. Opposite in a little sheltered cleft of the rocky coast, down at the level of the malachite sea, a brick factory with its tall brick chimney blots the view of the ivory city with its honey-colored cathedral rising from the sea. The factory is abandoned, and one is glad of its commercial failure, but it is still extant and will probably start up again with better times.

"Farther along, a mile or two, is the most disquieting and ominous thing of all, and at Porto Pi,—no less. Once this was the loveliest thing near Palma; a little sheltered inlet of still, blue water, with drooping trees close along the sides, and at the mouth of the harbor two strong towers where a vast chain was stretched from one to the other to close the port. It was all so beautiful that the villas of the citizens grew up along its banks and on the heights above. So it all was until the war, and then came that event that is most ominous of a final ending of Mallorca as a hidden sanctuary of reality. Now all one side of the once shady and grass-paved glen has burst into an enormous eruption of bricks, galvanized iron, and structural steel. Towering elevators and cranes slash the sky; piles of coal and chemicals form sordid hillocks; tracks run here and there with rumbling cars and clanking din, while over all, black smoke and nauseous fumes stain the air. It is a factory for the manufacture of chemical fertilizer, and is the forward-looking development of the richest and most prominent man on the island.

"Of course, if this sort of thing goes on,—but why borrow trouble? These blemishes I have noted are, so far as I have seen, the only ones on the island, and all lie within five miles of the center of the city. Canker-like this spreads, but must it be for all time? Before it covers the whole island with palatial hotels, garages, movie houses, casinos, roller-coasters, and all the other products of civilization, may not the tide change, as always in the past it has changed when it has reached its full? As once, and with less cause, mobs rose to crush the monks and friars and devastate their treasure-houses of perfect art,—Poblet, Santa Creus, Guadalupe, Montserrat, and the Dominican cloister here in Palma,—so on another day another mob may rise against the fertilizer factory of Porto Pi, and then the water may clear again, the trees and shrubs and flowers creep over the new mounds of debris, the birds come back, and with them the citizens of Palma to the villas they were forced to abandon when industrial progress drove them from its scene of action.

THE MODERN ENGLISH HOUSE. With an Introduction by R. Randal Phillips. 192 pp., 8½ x 11 ins. Price $8.50. Charles Scribner's Sons, 597 Fifth Avenue, New York.

READERS of the English periodicals which deal with country living and with the various kinds of sport which it involves will remember the charming country houses which they illustrate from time to time,—cottages for the most part, or country houses of small or medium size, designed in the architectural styles which for over one thousand years have been identified with the English country. This volume, published by *Country Life* (London), illustrates some of the rather more recent work of quite a number of English architects. The exteriors of the houses are shown and in many instances the interiors, and since in most cases the plans are included, the American architect or home owner will be able to gather many suggestions which will be of both interest and value.

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The Modern English Garden

A Survey of Recent English Work

FROM the rich pages of *Country Life* (London) there have been gathered the illustrations which make up this review of the modern English garden,—not the vast formal garden such as is found on almost every great English estate, but the garden of moderate or even of small extent, in a suburb or in the real country,—the cottage garden, in fact, famous in England's history. The many views illustrate gardens of several kinds, the term "garden" being used in a generic sense. Thus there are shown flower gardens, rock and water gardens, as well as many views which illustrate successful handling of gardens on different levels, terraces, gates, sundials, arbors, pergolas, tea houses, fountains, statuary and benches or seats, and other details which enter into successful garden making. The excellent taste displayed in selecting the illustrations which make up the volume and the practical value of the work to architects and landscape architects render it of the first importance.

192 pages, almost entirely half-tone plates; 8½ by 11 ins. Price $8.50

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GATEWAYS AND DOORWAYS OF CHARLESTON, S. C., IN THE EIGHTEENTH AND THE NINETEENTH CENTURIES. By Elizabeth Gibbon Curtis. Edited with Introduction and Notes by Maxwell Kimball and Arthur C. Holden, 68 pp. 8 x 11 ins. Price $7.50. Architectural Book Publishing Co.

THE early architecture of Charleston is essentially that of eighteenth century of England, adapted by gradual modifications to the requirements of a subtropical climate. Of direct Latin influence there was little if any. The nearest Spanish settlement was St. Augustine, and such relations as existed with it in colonial times were infrequent and generally hostile.

True, a large and important element of the early settlers were French Protestants; but their memories of their mother country were too bitter to be preserved, and their culture as well as their political allegience was given unreservedly to England; and later, when fortunes accumulated, they sent their sons to London or Edinborough to be educated, and not to Paris. After the middle of the eighteenth century English Palladian architecture became more and more chastely Italian, more severely classical, owing to the influence of such architects as Robert Adam and James Wyatt, both of whom had studied in Rome, and of "Athenian" Stuart and Sir John Soane, who initiated and sustained the vogue for the Greek manner of design. The mode considered proper for a gentleman's town mansion or country seat in England found its counterpart, only a decade or so later, in South Carolina. Thus we have the interesting phenomenon of an architecture originating and developing in the meridional lands of Europe, where a brilliant and vertical sunlight fostered forms of refined proportions and subtlety of light and shade,—an architecture that we call Classic,—which in the course of time, under the expanding impulse of the Renaissance, is adopted in the northern lands of Europe, not without certain violence to its essential character and ill adjustment to climatic needs, and a forced airiness that "shall call the winds through long arcades to roar, proud to catch cold at a Venetian door."

Happily, however, through the channels of colonization this Classic architecture returned to a land of sunlight and color not unlike the home of its first flowering. Here it seems both reasonable and beautiful. For the cool and airy shadows of a colonnade are as grateful during the greater part of the year in Charleston as ever they were in Ephesus or Pompeii. So well assimilated and convincing is this transplanted Latinism that its essentially British source and character are usually overlooked by the visitor, especially if his sojourn is brief. He sees the brilliant hues of oleanders against the fading tints of mouldering stucco walls, and hears the sea breeze rustling the stiff palm leaves against tiled roofs. Though the tiles be as English in style as any roof in Suffolk, the subtropical setting has its effect on the visitor, and his imagination is unconsciously colored by a Mediterranean or Caribbean complex. From this glamorous mental approach all is transformed; roof tiles become Italian, ironwork becomes masterpieces of Spanish or French *orfevrerie,* modest dwellings become the retreats of retired pirates, and an innocent vegetable market is glorified into a slave mart as thrilling as any in Istamboul or Samarkand. In such an atmosphere gay romance treads upon the heels of staid history; though

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the writer start out with the best intention in the world of confining himself to facts, it is not always easy to do so.

The desire for privacy and seclusion inherited from European traditions led to the erection of high garden walls surrounding the houses, access to which was gained through gates, often approaching the monumental in scale and providing the iron craftsman with an opportunity to display his invention and skill. Most of this ironwork belongs to the earlier half of the nineteenth century; much is even later, and is largely the work of German craftsmen who established themselves in the town prior to the Civil War. Though the variety of motifs used is restricted and it is the work of craftsmen rather than that of artists, its architectural effectiveness is perhaps more pronounced than if the design and workmanship were more individual in character. Much of it betrays a combination of unrelated motifs which fail entirely to compose, yet serve admirably as a screen through which may be seen sunny lawn or shady garden.

That Mrs. Curtis has sincerely appreciated the evanescent charm of early Charleston, a charm that is at once classic and informal, well mannered yet gracious, is beyond question and vastly to her credit, for true appreciation is as desirable as it is rare. Her collection of views, though somewhat lacking in fastidiousness of selection and coördination of arrangement, is both generous and comprehensive. The illustrations themselves are unequal in quality, some having badly faded and become "foggy," while others leave nothing to be desired. It is somewhat to be regretted that the editors, who have justly earned so enviable a reputation for their invaluable works on the antiquities of other sections of the country, should not have had the opportunity of more carefully verifying the historical data furnished. The lack of a certain authenticity robs this work of that authoritative value to which the obvious intent of the authors should entitle it. However, as the architectural profession by and large is more concerned in the appreciation and creation of beauty than in historical accuracy, such criticism is largely negligible and does not detract from the essential value of the volume as a definite contribution to documents on Americana, and to the traditions which make for continuity in American architecture.

COLONIAL LIGHTING. New and Revised Edition. By Arthur H. Hayward. 114 plates, 168 pp. 6¼ x 9½ ins. Price $7.50 Net. Little, Brown & Co., Boston.

THE importance of using carefully selected lighting fixtures can scarcely be over-estimated, since if well chosen they add greatly to the architectural integrity and interest of a building of almost any type; so important, in fact, is the matter of lighting fixtures that interiors may easily be made or ruined by a wise or an unwise selection of fitments, and this is true in a particular sense when an interior is of the Colonial type. What is probably the most complete and quite the most authoritative work on lighting during the American colonial period is now appearing in a new edition, revised and also enlarged, and with considerable new matter added. The different eras of the colonial period are dealt with in the descriptions as well as in the many excellent illustrations.

The Smaller Houses *and* Gardens *of* Versailles

By Leigh French, Jr. and Harold D. Eberlein

FOR the moderate-sized American suburban or country house there is nothing to follow in the way of a type at once more beautiful and more practical than the seventeenth and eighteenth century French houses of the same kind. The type possesses that graceful balance in the way of exterior design and that slight degree of formality of interior which is being expressed in current domestic work of the same character; and from all the domestic buildings of seventeenth and eighteenth century France there is nothing which offers a more fruitful basis for study than the smaller villas built near Versailles for the attendants of the French court. These buildings possess in an unusual degree just those qualities in the matter of design now most sought for in America.

THIS volume, prepared by two students of French and American architecture, is a practical study into the adaptation of the simpler French forms to American conditions. There is not one of the many villas illustrated which does not afford abundant suggestion in the way of exteriors to present-day architects, and the interiors with their simple and graceful disposition of wall paneling, mantels, and stairways abound with suggestions for working out interiors to accord with the expression given by the buildings' exteriors. Plans in many instances are easily adapted for use today, and the arrangements of the gardens and other outdoor areas offer suggestions for making these important adjuncts to American suburban or country houses heighten the character and interest of the buildings themselves.

202 Pages, 9¾x11¾ Inches. Price $6.

ROGERS & MANSON COMPANY, 383 MADISON AVENUE, NEW YORK

The ARCHITECTURAL FORUM

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THE EDITOR'S FORUM

THE PROGRESS OF ZONING

A RECENT survey of the increasing popularity of "zoning," made by the Department of Commerce, includes some interesting statistics. A recent editorial in *The New York Times* presents a thoughtful, carefully written digest of the survey:

"Zoning has made astonishing progress in American cities. The latest Department of Commerce report indicates that three-quarters of the largest of them now have the benefit of zoning ordinances. Many of the smaller municipalities have followed suit. As the first comprehensive ordinance was adopted, not without misgivings, by New York scarcely a decade ago, the spread of this means of regulating a city's growth is the more remarkable. Within the past year the important Euclid case, in which the United States Supreme Court took a most sympathetic view of the principles of zoning, gave it great impetus. States whose courts had been somewhat wavering in their attitude, like Pennsylvania and Maryland, found in that decision renewed assurance. New Jersey, where the courts had made difficulties, has just adopted a constitutional amendment making the practice of zoning cities secure.

"In American cities zoning has been until recently in the experimental stage. Its advocates did not want to press forward too vigorously until they knew how the public would submit to the restrictions and how the courts would regard them. The recent Supreme Court decisions,—there have been three others since the Euclid case,—may fairly be said to have brought that early phase to a close. Property owners in increasing numbers have come to realize that regulation of height, area and use redounds in the end to their own benefit. For equitable statutes there is no longer legal hazard. From now on zoning becomes mainly a legislative matter. It is bound to spread rapidly to those communities which have not yet enjoyed its benefits. Philadelphia, Detroit, Cleveland, New Orleans and Louisville should soon be in line, and will probably enact zoning provisions.

"New York has a special interest in this movement, and a rightful pride in it, because she was a pioneer. Although Boston and Los Angeles had taken steps earlier to limit the height of buildings, New York was the first to adopt, in 1916, a comprehensive ordinance. Under wise guidance enthusiasms were kept in leash. Nothing drastic was attempted at first. As Thomas Adams put it in his article in Sunday's *Times*, early efforts had to take the form of a compromise between an ideal conception of what was desirable to give every room direct light and access to the outer air, and a practical condition involving the land values, heights and densities that had become established in the city. Already we have seen the results in setbacks and towers, in protected residential areas and in stable values. We shall probably hear more of zoning in its relation to density of population, segregation of use and relief from traffic congestion, all of which are affected by zoning."

THE PROGRESS OF ZONING

ANNOUNCEMENT has been made of an exhibition of shell mosaic, designed by Mrs. John Jay Chapman, which is to be held at the Anderson Galleries, New York, November 10 to 26. The art of shell mosaic, which Mrs. Chapman has revived, is practically unknown at present, but it was used to a great extent in the ancient architecture of Persia and the Mediterranean countries. Mrs. Chapman received her inspiration from a frieze in a palace at Haidarabad, and the work of the studio she has founded has been received with great enthusiasm by leading American architects, who have spoken of it as a most appropriate decoration for loggias, fountains and swimming pools. The November exhibition will be the first public showing of this work, and will include 28 pieces, among them wall fountains over-door panels, friezes and other wall decorations. It is a type of decoration admirably adapted to use in connection with many forms of modern architecture.

CORRECTIONS

THROUGH a regrettable error on our part, several names were omitted in the article in THE FORUM for October describing the Graduate School of Business Administration, Harvard University, by Charles W. Killam, Professor of Architecture, Harvard University. The name of Charles Z. Klauder was omitted from the list of judges of the first stage of the architectural competition. Olmsted Brothers, of Brookline, were the landscape architects, with Henry V. Hubbard particularly in charge. H. G. Balcom of New York was the structural engineer, and Tenney & Ohmes of New York were the mechanical engineers. Walter S. Burk, the Inspector of Grounds and Buildings of the University, gave valuable help in a wide range of problems, particularly in helping to obtain economical and easily maintained construction and equipment. The clause on page 351, line 14, regarding brickwork should have read, "the brickwork simply resembles that of the older buildings of the University, as does the brickwork of the other buildings built in the last 25 years," to correct an obvious omission.

In the "Small Buildings Section," the House of H.E. Pettee, Saratoga Springs, N. Y., should have been credited to Alfred Hopkins, not to Hopkins & Dentz.

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From a Color Sketch by Norman C. Reeves

The Architectural Forum

The ARCHITECTURAL FORUM

Volume XLVII NOVEMBER 1927 Number 5

French Provincial Types and American Design

A HOUSE AT PURCHASE, N. Y.

LEIGH FRENCH, JR., ARCHITECT

THE current trend of design in American domestic architecture is today more complex than it has ever been before. With the manifold diversity of tastes to be satisfied, and with the increasingly composite racial character of the people, a people affected by all manner of inherited preferences, it could not well be otherwise. Then too, it has long been the wont of American architects and laymen alike to be always alert, to observe widely, and to assimilate from the most diverse sources whatever appeals to them. In the domestic architecture of the present time it needs no very acute perception to recognize at once the many strains of design that appear on every hand. Besides the sundry types of true American Colonial that figure in modern adaptations and reproductions, and the Classic manner manifested in the various Georgian episodes, there are different local and traditional British phases that had no counterpart in the early Colonial work of America; in still more numerous array, there are French derivations taken from a wide range of examples belonging to all periods and districts; Italian derivations chosen from every province between the Alps and Sicily; Spanish derivations selected from prototypes all over Spain; and even Dutch derivations from motifs in the Low Countries.

Some of these many incorporations of derived designs have been done well, some not so well, and with varying degrees of fitness to purpose and environment. Likewise, certain of these transplanted modes, by the very nature of their inherent characteristics, lend themselves more readily than others to the process of assimilation on American soil. Of them all, there is none that seems to fit in more appropriately with the requirements of American country life and the quality of the American country than the type of house common to the northern parts of France. It is "provincial" in that it is peculiarly distinctive of the rural parts of Normandy and the provinces nearby and is not the kind of dwelling found in the cities and larger towns; but it offers no suggestion of that crudity and lack of assured poise which many unfortunately associate with the term "provincial." On the contrary, it possesses all the distinction and suavity of bearing that one customarily associates with a polished and easy manner of life. Furthermore, it has enough formality of composition to satisfy those whom a merely rustic rendering would offend, and yet it is informal enough to agree with the easy freedom of country living.

The house at Purchase in the Town of Harrison, Westchester County, N. Y., which forms the subject of the present discussion, is designed in a vein distinctly reminiscent of the type of provincial Norman house just alluded to. Without making any attempt to reproduce or to adapt some specific original, and without setting out to assemble a composition by piecing and fitting together a collection of features and details borrowed from a variety of sources, the essential quality of the type has been imparted to the house, which is American and not French in the organization of its plan and is thoroughly suited to American conditions of living. In regard to plan, many a French type that is highly alluring externally is not at all suited to American living requirements; the provisions in the service quarters are in some ways totally inadequate and in others superfluous, while the master's part of the dwelling often has a scheme of arrangement that would be greeted with protest by any American family. Comfort and convenience are considerations little accounted of in the service part of a great many French houses, to our way of thinking, for French domestics as a class have always seemed singularly indifferent to personal comfort; but if comfort and convenience were not duly taken care of in the service part of an American country house, there would be an immediate and vigorous complaint from the servants, and the occupants would have the annoyance of an almost unceasing change of staff. In any adaptation of French domestic types, therefore, the demands from the working end of the establishment must be satisfactorily met at the very outset.

The house at Purchase is built of hollow tile covered with smooth stucco which is painted a light cream-yellow. The roof is covered with crisp looking, thin black slates with lead ridge cresting and lead strips along the angles of the hips. The tops of the little bull's-eye dormers are also covered with lead. All of the casements and frames are painted

ENTRANCE FRONT

GARDEN FRONT, HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

LIVING ROOM

ENTRANCE HALL, HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

white, and the doors and shutters are painted a light brownish gray. Along the south or garden front of the house, the terrace is paved with brick, and the space before the house door on the north side is also brick-paved. Blue stone flagging has been used for the coping of the retaining wall along the south side and for the paving of the ramp, which descends from the grass terrace to the lower level. The retaining wall itself is built of brick and has a perceptible batter, and the brickwork has been painted the same light creamy yellow as the walls of the house. Beneath the east end of the grass terrace are a large root cellar and a storage place for bulbs during the winter.

Inside the house, the entrance hall and the gallery extending to the dining room are paved with brick, first soaked in oil and then waxed so that the surface quality is exceptionally pleasant. In the living room there is a paneled dado with fluted wooden pilasters dividing the wall surface into panels and extending to the wooden cornice. At the north end of the room the panels are filled with early nineteenth century French landscape wallpaper in sepia monochrome, glazed. The mantel, the chimneypiece paneling, the dado, the cornice, the pilasters and the doors and casements are painted a pleasant and rather light green, slightly grayed by glazing, while the wall surfaces are cream color. The fireplace surround is red.

The dining room, at the eastern end of the south front, is paneled from floor to ceiling and painted a soft gray. The detail of the paneling here, and the treatment of the window reveals will be found to be of exceptional interest. One of the most fascinating bits of interior treatment in the house is to be found in the little coat room, unfortunately impossible of illustration by photographic means. The walls are covered with red paper with Chinese decorations of trees and birds in gold and several tones of green-blue. Coated with shellac, this has the effect of red lacquer. The woodwork and cornice are green-blue, and the ceiling, of a blue harmonizing with the other colors, is studded with small gold stars. Throughout the house much thought has been given to the color, and color has been made to play its full part under the direction of the architect, who settled all details.

In the matter of exterior design there are two features to which critics of a certain mental bias would probably be disposed to take exception—the tower by the entrance on the north, and the conically roofed turret in the angle of the south front. These, the critical objector of a vigorous "practical" turn will say, are merely picturesque incidents with a romantic appeal, and their presence cannot be justified by their serving any logical, utilitarian purpose. They are, therefore, to be classed as whimsical and savoring of affectation. In answer let it be said that the tower accommodates an elevator which was required by the client at that particular spot and which it would have been very inconvenient to put anywhere else. The bell in the bell cote on top of the tower is no more a "picturesque" whimsy than the tower itself. One stroke of the bell summons the chauffeur from the garage, two strokes the gardener, and so on through a well understood system of signals for the whole establishment and for the house on the adjoining place. The scheme is much simpler and works out more satisfactorily than a system of house telephones or the ringing up of a local exchange, and there are no woes of "wires down" after a storm and no telephones out of commission after an electrical disturbance. "Turrets for turrets' sake" may supply a very convenient handle for the gibes of those who like to poke fun at French domestic architecture, but the turret on the south front is proof and armed against jeers in this case, for it serves a distinctly "practical" purpose. Downstairs it affords a handy as well as sightly storage place for all sorts of terrace paraphernalia that otherwise would either have to be lugged into the house in bad weather or else have some other, and probably less suitable, receptacle provided for them. Upstairs, the turret makes possible a commodious means of communication between two rooms without sacrificing some much needed wall space; not one square inch is wasted on any sort of "picturesque" sentimentalities.

Conservatory, House at Purchase, N. Y.
Leigh French, Jr., Architect
See Also Plates 83 to 88 Inclusive

The Asset of Elegance in the Small House

By HAROLD D. EBERLEIN

ELEGANCE in miniature might well be the characterization applied to the little house at Jamaica, N. Y., designed by Newton P. Bevin for his own occupancy. The really small house, as a rule, is "nobody's darling," and it comes out at the little end of the horn. In far too many cases, architects don't care to bother with it, unless they have some special, and usually personal, reason for being interested. They prefer, quite naturally, the commissions that will yield them more substantial returns, and the very modest-sized dwelling is likely to be dismissed by them in perfunctory fashion. When the building contractor alone is responsible for its appearance, without any direction from an architect, it fares even worse and becomes utterly banal and stupid, if not aggressively objectionable.

And yet, the very little house,—it can be a veritable gem, if properly handled,—plays a role important and out of all proportion to its actual size. Its educational effect in the stimulation of popular taste is more potent and directly appealing, time and time again, than that of the larger and more ambitious dwelling. Then, too, its effect upon the general architectural character of the environment in which it stands is not to be despised. If it is thoroughly well designed, it lends distinction to all its surroundings, atoning for the commonplace dullness of larger neighbors; if it is stupid or ugly, it asserts itself with offensive emphasis and detracts from the excellence of everything near it. It is a curious thing that very large houses and very small houses have one quality in common,—that they nearly always become the focal points of attention and attract a more definite degree of notice than the houses of average size near them, which are often passed by almost unheeded. After all, it is commonly the extremes that chiefly attract the popular eye, particularly in buildings.

The design of this house at Jamaica is another evidence of the current trend toward the reticence and austerity of the early nineteenth century, whether it be manifested in the particular guise of the French Directoire and early Empire or in the manner of the British and American Regency mode before the graceful refinement of that comparatively short-lived fashion was suffocated by the weight of the special brand of neo-Grec archæology that swept over the country, carrying all else before it and finding its most frequent interpretation at the hands of the vil-

Entrance Front, House of Newton P. Bevin, Esq., Jamaica, N. Y.
Newton P. Bevin, Architect

Terrace Doorway

lage carpenter. The village carpenter's neo-Grec efforts were infinitely better than what followed, but they lacked all the elegance that characterized building in the first quarter of the century, while the arch in one form or another still held its place despite the pressure of the advancing orders toward popularity.

One test of intrinsically good architecture is that it will always stand reduction to its lowest terms, so to speak, without suffering any deterioration in quality. It depends primarily on well composed masses and the correct proportions of its component parts. It will be fundamentally good, whether bereft of all ornament or whether endowed with its full complement of whatever decoration is used; its inherent goodness is not dependent upon ornament. It is the function of ornament and all manner of decorative detail to accentuate and give additional interest to structural characteristics. Unfortunately, there are not wanting those who seem to feel that one of the chief purposes of all decoration is to conceal or, at least to atone for, the defects of insufficiently studied composition,—that the fundamentals of mass and relation of proportions can be hastily dismissed so long as there is a multiplicity of "features" to keep the eye engaged and divert attention from the underlying shortcomings. One is forced to this uncharitable conclusion by certain current examples of meretricious domestic work,—probably to be attributed in the main to speculative builders or obdurate clients,—

Living Room, House of Newton P. Bevin, Esq., Jamaica, N. Y.
Newton P. Bevin, Architect

where the test of eliminating those non-essentials that commonly becloud cursory and popular judgment would leave but a pitiable residue of merit. And rigid elimination in designing is one of the surest means toward attaining the quality of elegance which, in other words, is but the ripe result of choosing and combining only what is essential and most appropriate, and then of discarding everything else.

The greater part of American domestic architecture of the first quarter of the nineteenth century satisfies this standard of criticism. Directness and elegance seem to be common qualities, no matter whether the immediate source of inspiration were contemporary French or whether the Regency mode, then characteristic of England and America alike, supplied the underlying influence. The same correctness of proportions, the same well studied balance, the same serenity and poise were qualities distinctly in evidence on every hand. Elegance was an asset enjoyed by nearly every domestic structure,—almost without exception. The small house at Jamaica, informed as it is by the prevailing spirit of this period, partakes of its common characteristics. While not following with sedulous exactitude the model afforded by any one French prototype, the architect has caught and held the essential qualities of the manner in which he elected to work. This after all is better, for it insures the preservation of vitality and makes the results appropriate to their purpose.

An Interior Detail

Library, House of Newton P. Bevin, Esq., Jamaica, N. Y.

Newton P. Bevin, Architect

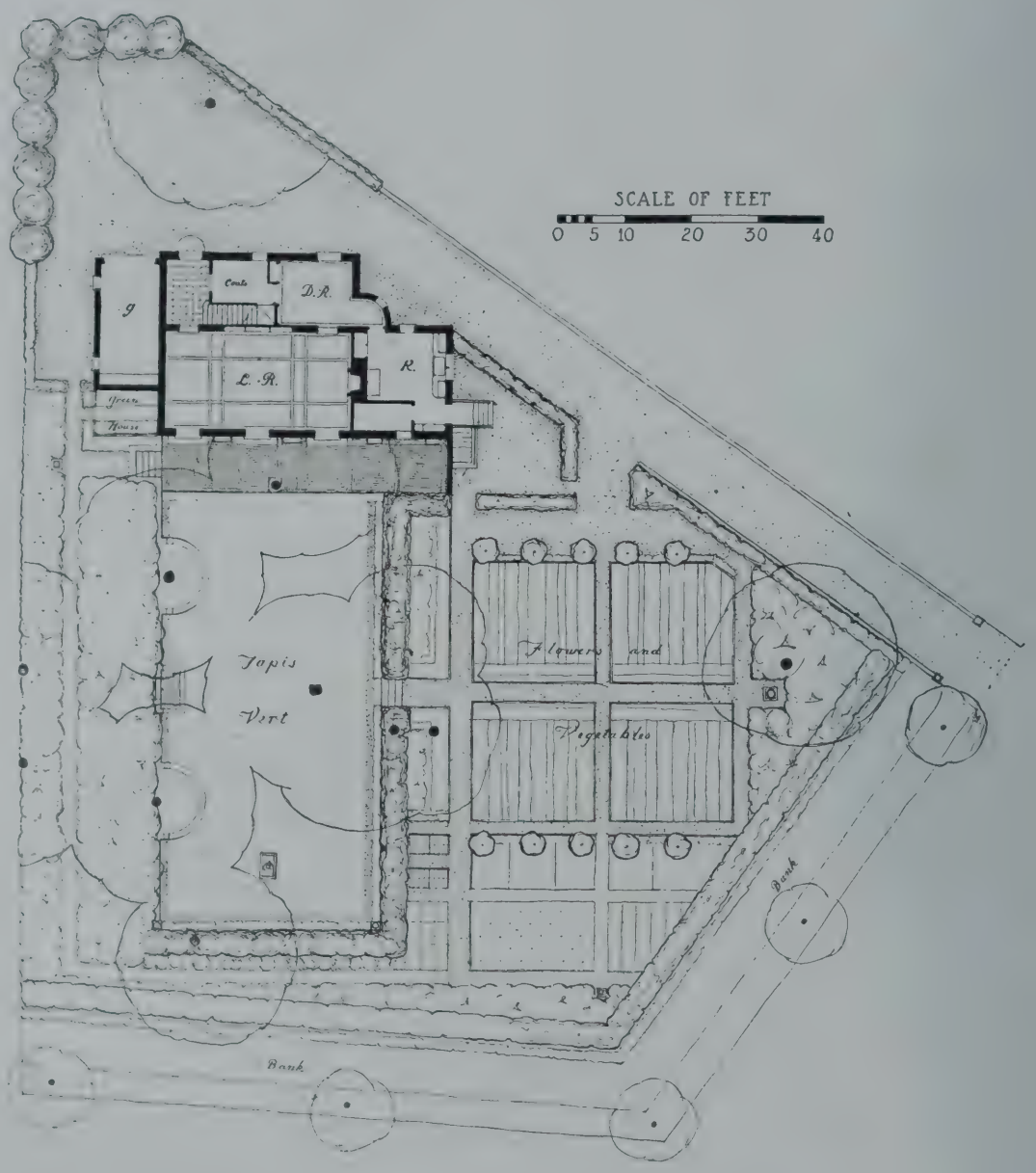
The term "small house" is not loosely applied, for here is a house very small indeed. On the ground floor it contains a tiny but very dignified entrance hall, a large coat room (which is also a passageway from the dining room), a large living room, a diminutive dining room, and a kitchen. Upstairs there are four bedrooms and two baths. That is all, save a laundry in the basement. The walls are of brick, whitewashed, and the roof is of black slates. The whole exterior is an embodiment of utter simplicity, but it is the simplicity born of studied elimination, not the simplicity resulting from poverty of imagination. Indeed, the results of imagination restrained, disciplined and held in leash, can be discerned throughout the entire scheme of composition.

Indoors we find a more cosmopolitan and less austere tone of interpretation. The entrance hall, paved with squares of black and white marble laid chequerwise, displays a genial note of merriment in the eighteenth century Italian console table flanked by eighteenth century Italian Directoire chairs with melon-striped coverings. Italian Directoire furniture, despite all efforts to make it conform to decorous French models, could never escape divulging the latent, irrepressible blithesomeness of its Italian origin. The living room, however, is the interior feature of greatest interest. The oyster-white walls serve as an admirable foil for the Baroque gilt console tables at each side of the black and white mantel; for the old Italian yellow damask curtains at the three full-length windows giving on the terrace; for the Italian Directoire and carefully chosen early Victorian furniture; for the walnut floor; for the bookshelves of exceptionally pleasant design; and for the ceiling, divided into compartments covered with gold paper, displaying originality.

Terrace, House of Newton P. Bevin, Esq., Jamaica, N. Y.
Newton P. Bevin, Architect

Plan on Back

GARDEN FRONT, HOUSE OF NEWTON P. BEVIN, ESQ., JAMAICA, N. Y.
NEWTON P. BEVIN, ARCHITECT



PLOT PLAN, HOUSE OF NEWTON P. BEVIN, ESQ., JAMAICA, N. Y.

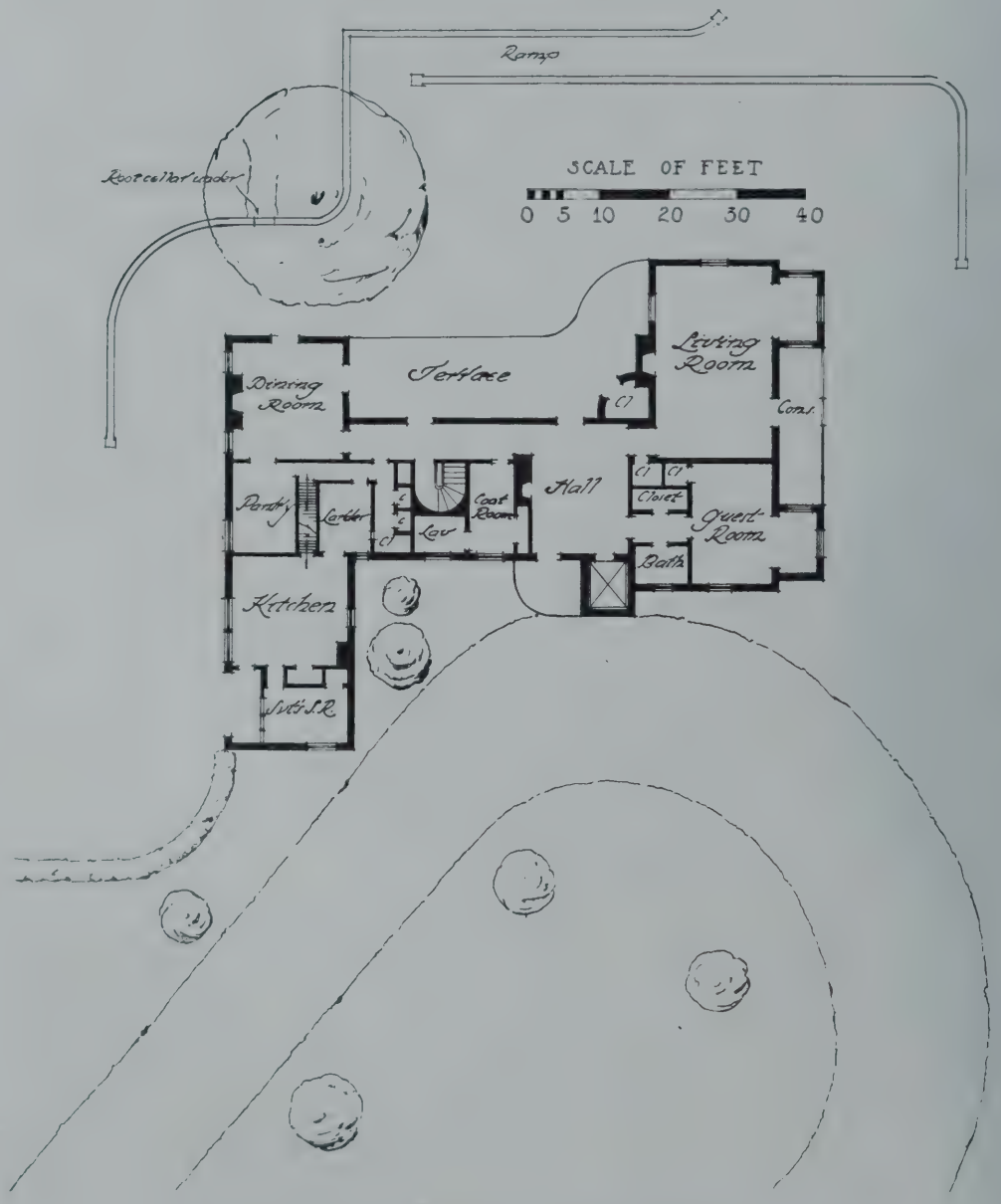
NEWTON P. BEVIN, ARCHITECT

ENTRANCE, HOUSE OF NEWTON P. BEVIN, ESQ., JAMAICA, N. Y.
NEWTON P. BEVIN, ARCHITECT

Plan on Back

WEST WING AND TERRACE, A HOUSE AT PURCHASE, N. Y.

LEIGH FRENCH, JR., ARCHITECT



PLOT PLAN, A HOUSE AT PURCHASE, N. Y.

LEIGH FRENCH, JR., ARCHITECT

EAST WING AND TERRACE, A HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

ENTRANCE, A HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

LIVING ROOM, A HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

DETAIL OF LIVING ROOM, A HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

DINING ROOM, A HOUSE AT PURCHASE, N. Y.
LEIGH FRENCH, JR., ARCHITECT

Natchez, Mississippi

By WILLIAM P. SPRATLING

DIVIDING two states, Louisiana and Mississippi, the river coils in a great silver-brown flood at the feet of Natchez. On the distant Louisiana shore the little village of Vidalia retreats behind protecting levees and presents a curious contrast to the position of proud and unthreatened Natchez. Vidalia is the scene of a former crevasse, with the surrender of many acres to the Father of Waters with but a strip of island and a miserable marooned cabin to witness. Crowning the great bluffs, fully 200 feet above the rush of the river, Natchez rests, secure and perhaps a little arrogant.

As I stood there on the rim of those bluffs in the early morning, intent on the stretch of scenery below, there was an impression of something vast and, in a manner, suggestive of the wilderness. The drop on that side is almost perpendicular, with no rocks, but all of stark yellow earth, tufted with pine and underbrush and falling away suddenly from underfoot. It is the one thing New Orleans, as a colorful old river city, lacks,—this quality of the earth and of sudden hills,—the high, heavily wooded bluffs with the tremendous expanse of moving waters and the brown and green haze of Louisiana beyond,—as it is always in evidence at Natchez. Looking at it thus, the pioneer background of the great middle west almost completes itself. One can easily vision the enthusiasm of the early pioneer builders and of Bienville and his comrades who discovered this magnificent site. That was in 1700 and during the days of the Natchez tribe of Indians.

The amiable voice of a negro laborer interrupted my thoughts with, "she goin' up or comin' down," and there was some doubt as to whether he meant the dingy and almost imperceptibly moving little river boat in the distance, with its half-mile of barges, or the river itself. These matters of rise and fall and all the little daily possibilities have been for generations and still are cause for constant concern, not only for river people but for all along the Mississippi.

At the foot of broad-buttressed bluffs and clinging to a narrow shelf of soil that is obviously falling away before the demands of the river, is "Natchez-under-the-Hill," a sort of scorned and deprecated offspring of proud, aristocratic, ante-bellum Natchez. It was this fragment of the old town that was most familiar to the roustabout gangs, gamblers and river people of a half-century or more ago. Its single busy little street originally presented an imposing array of prosperous fronts, with dance halls, palaces of chance, and even a little red church. Today the river traffic is no more, prosperity has departed, and there remain but the church, a few old houses (with nice iron balconies) and the ferry landing, now forming a sort of picturesque preface to the town.

Natchez itself, as the Exchange Club's large black

A Small House of Unusual Charm and Refinement

The Oldest House in Natchez

and white signboard at the railroad immediately informs you, has no less than three strong banks (perhaps more by now), two large cotton mills, an overall factory, etc., and it possesses a vast lumber mill, the yards and great timbers of which sprawl above the river and entirely cover a particularly mountainous section of the bluffs. Other details of note were carefully listed on this signboard, but the memory of faded glories and the wealth of old architecture were not included. The charming old houses have apparently been taken for granted for so long that it seems that modern Natchez is more or less oblivious of their presence. In these, however, is the thing that allures; we have the fragmentary glimpse of an antique portico, of shadowed columns and moss-covered brick, and there is the constant invitation of each corner to be turned, with frequent reward of delightful discovery. In spite of the fact that Natchez, charming and old fashioned as she is, has had her share of abortive attempts at modern building and makeshift remodeling, these things are in the minority here. One finds the purity of a Greek temple, that was once a bank, invaded by a sign shop, or marred with a pediment that has been re-

Richmond Plantation, Natchez

covered with tin shingles; a little Colonial residence of white simplicity may be found jostled by a row of brown and yellow bungalows. Doubtless these details of bad taste are unavoidable and should be accepted along with the withdrawal of prosperity.

The town itself contains countless spots of charm, architecturally,—sometimes as single houses and occasionally as several in succession; they are fairly thoroughly scattered through all sections. There are several mansions of considerable grandeur, though there is little of the pretentious sophistication that exists elsewhere. The houses range in period from French and Spanish Colonial of the middle eighteenth century and earlier to the chastely pure or extravagantly aristocratic examples of the Greek Revival, dating from before the Civil War. Smaller houses of simple charm or demure elegance are to be discovered at almost every turn. About these old buildings there is wrapped that air of quiet and sleepiness that must be peculiar to hundreds of small towns of the South. It is a quality to be associated with the hum of bees in the magnolias, gnarled fig trees next to the houses, and secluded lawns that retreat back of white palinged fences and that are shaded by enormous live oaks with Spanish moss. There is a leisureliness in the atmosphere along with kindliness. Negroes in passing have much to say, and, for the stranger the urge to hurry is here curiously remote.

The casual visitor will discover a lack of printed information in spite of the fact that there are a chamber of commerce, and the large signboard at the railroad. Almost anyone, however, will give you historic facts,—of how the French founded Fort Rosalie, of their massacre by the Natchez Indians in 1729, and of the reinforcements sent by d'Iberville from New Orleans, 300 miles farther south. They are said to have killed more than 700 of the Indians in the ensuing battle, practically exterminating this most interesting of southern Indian tribes. The rest of the story of Natchez is varied and literally loaded with personalities. In 1763 the town passed into the hands of the English. In 1779 it became Spanish territory, along with the "Florida Parishes" toward the south and eastward, of which Natchez became the northernmost center of importance. The Spanish government was liberal and substantially

encouraged settlement and commercial development, and Americans found here promise of a great future.

During the first 40 years of the nineteenth century the little town on the bluffs, that had been alternately under French, English and Spanish rule and that had attained little more importance than would naturally belong to a pioneer trading post, flourished amazingly. Not only had families become wealthy during that period and standards of culture established but there had been a constant and vigorous impulse to build. The intensive civilization of the community has been realized materially in a heritage of splendid houses and plantation homes, which are far more numerous here than in any other center of that period in the South. It is principally in these imposing old places, of which comparatively few are to be found in the town itself,—the greater number being within a few miles outside,—that the visitor or one interested in old things will find delight.

There are brick Colonial houses and stuccoed mansions of the Empire period; there are houses of the eighteen-forties with cast iron "galleries" from New Orleans, and Spanish plantation houses of the last quarter of the eighteenth century. Of this last type "Richmond," a plantation house some two miles or so from the town, is most remarkable. Here is an old house which forms a sort of synopsis of styles. Its component parts represent three distinct periods of development, including the pioneer Spanish of 1770, the elegant Greek Revival, and a sophisticated ante-bellum type in a wing of severe proportions, done in brick. There is naïve and rudely proportioned "Monmouth"; "d'Evereux," with excellent wrought iron of the Empire; "Springfield," where Andrew Jackson was married in 1701; McKittredge's "Elmscourt"; "Woodstock"; "Magnolia"; "Windy Hill Manor",—where Aaron Burr was taken prisoner in 1807; the lovely place where Jefferson Davis was married and which overlooks the broad Mississippi from the magnificent heights above the river, as does also "Rosalie" in Natchez proper (where General Grant had his headquarters in 1863). "Arlington," dating from 1817, is probably as distinguished in its architectural parts as any house to be found along the whole stretch of the Mississippi River. It is truly "Early American" and bears the stamp of genuine refinement in the beautifully detailed cornice, the doorways, and the finely cut interior trim. All of these houses may be considered notable plantation types, though there are innumerable smaller examples no less charming, including the fine old mansions within the township of Natchez.

These pleasantly prosperous years following 1800 lasted barely through 1840. There was a combined failure of the five principal banks at that time, and the Civil War seems to have given the final blow to a general commercial collapse brought on by a period of inflation. The years following must have been barren for many. A pamphlet of 40 years ago, published in Natchez, puts up a brave front as to natural advantages, etc., though it is easy enough to read drama between the lines in passages such as this: "Government was restored to the intelligent people without a single act of violence or one drop of blood shed. Quietly and peacefully the control of public affairs was regained, and the class of population from whom danger was most feared acquiesced in the action of our prudent citizens with apparent pleasure."

In the Style of 1820

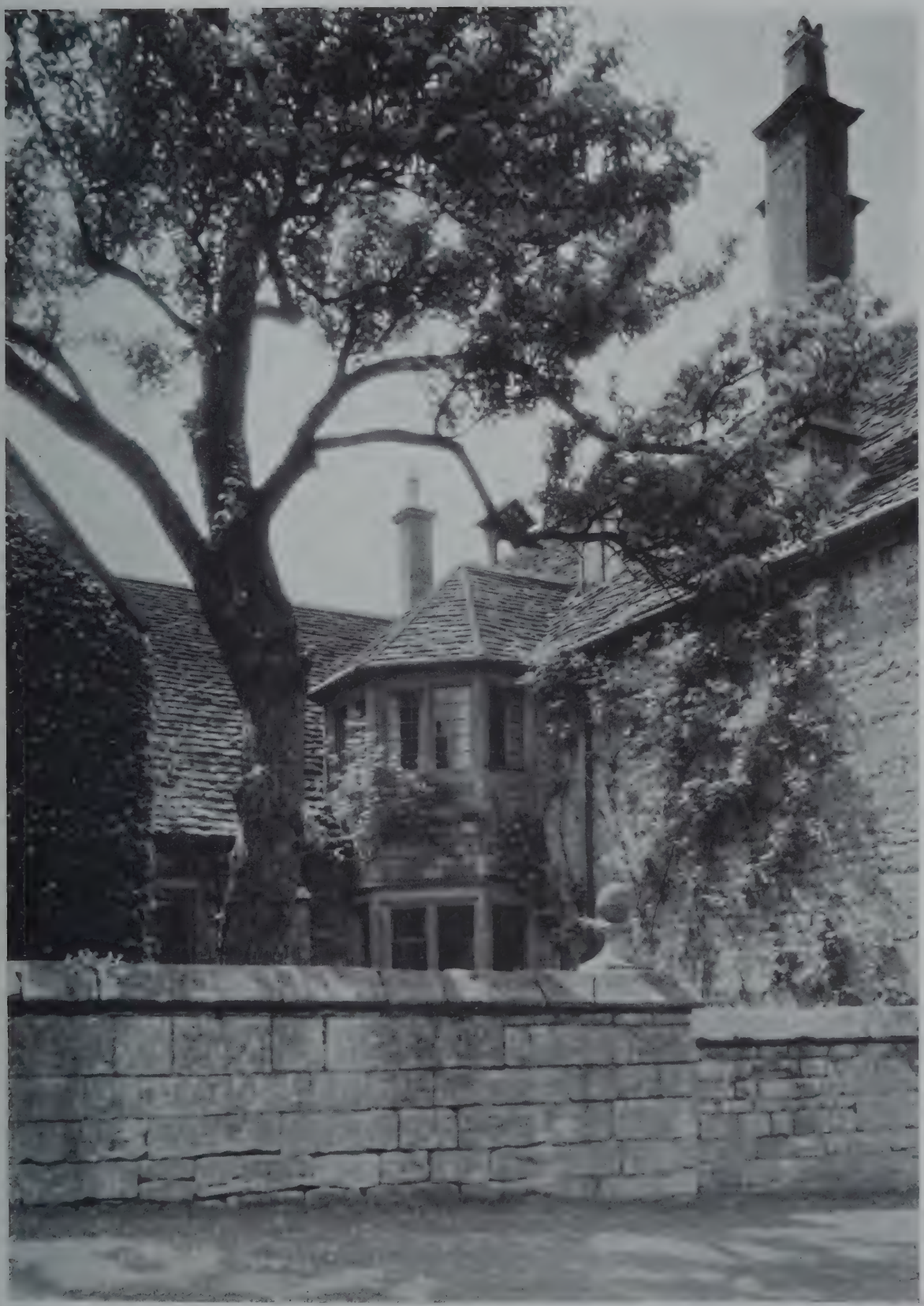
The Forum Studies of European Precedents

COTTAGES IN THE COTSWOLDS

STONE HOUSES OF THE COTSWOLD DISTRICT—THE NAVARRO HOUSE, BROADWAY

THE Cotswolds are always a source of delight to the architect, and we often find there the inspiration for some of our most attractive small houses. The name of the district itself seems to have been happily chosen, "Cots" meaning "small cottages," and "wold" meaning "open country,"—for here in the rolling hills of the open sheep country there grew up a distinctive, indigenous architecture. The style literally "grew" from the natural use of the workable limestone that underlies the district, wrought simply by the local artisan according to the tradition of the craft and modified by his personal touch and whim. His problem was simple, and his solution always direct without becoming either stereotyped, standardized or monotonous. The style and type of house and its construction remained practically the same throughout the district's period of greatest building activity, from 1550 to 1700 or thereabouts. The changes were modifications in detail and variation of a single theme rather than a progressive development. The charm of the Cotswolds lies to a large extent in this fact, this unity of character and materials with variety given by the quaint touches in this detail and that,—the finial, gable, door or chimney. This architecture is full of vitality, vigor, and interest, with a satisfying restfulness that is sadly lacking in our present-day, jarring ecclecticism, with its confusion of style.

There are characteristics that practically all of these simple, picturesque houses have in common. The buildings are nearly always but one room deep, some 16 to 18 feet wide, so as to be easily roofed with the characteristic slope, the pitch of which is about 55 degrees. It will be noted that the valleys of gables and dormers are never of the 'open variety.'' Rooms are arranged in one long plan or are added in gabled ells. Access to the upper story sleeping rooms is usually by a stair from the main room or the kitchen,—not from a stair hall. Fireplaces were a necessary part of every room, because central heating was unthought of, and the hearth was a focus of life in the household. The chimneys of the many fireplaces give ample opportunity for interest in their architectural treatment, and effectively break the skylines in a most pleasing way.



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Photos. Paul J. Weber

DETAIL, NAVARRO HOUSE, BROADWAY

The Forum Studies of European Precedents; Plate 106

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ONE END, NAVARRO HOUSE, BROADWAY

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A COTSWOLD COTTAGE GARDEN, BROADWAY

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ENTRANCE, COTSWOLD COTTAGE, BROADWAY

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VILLAGE CROSS AND COTTAGE AT STAUNTON, NEAR BROADWAY

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COTSWOLD COTTAGES AT STAUNTON, NEAR BROADWAY

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OLD COTSWOLD COTTAGES, BROADWAY

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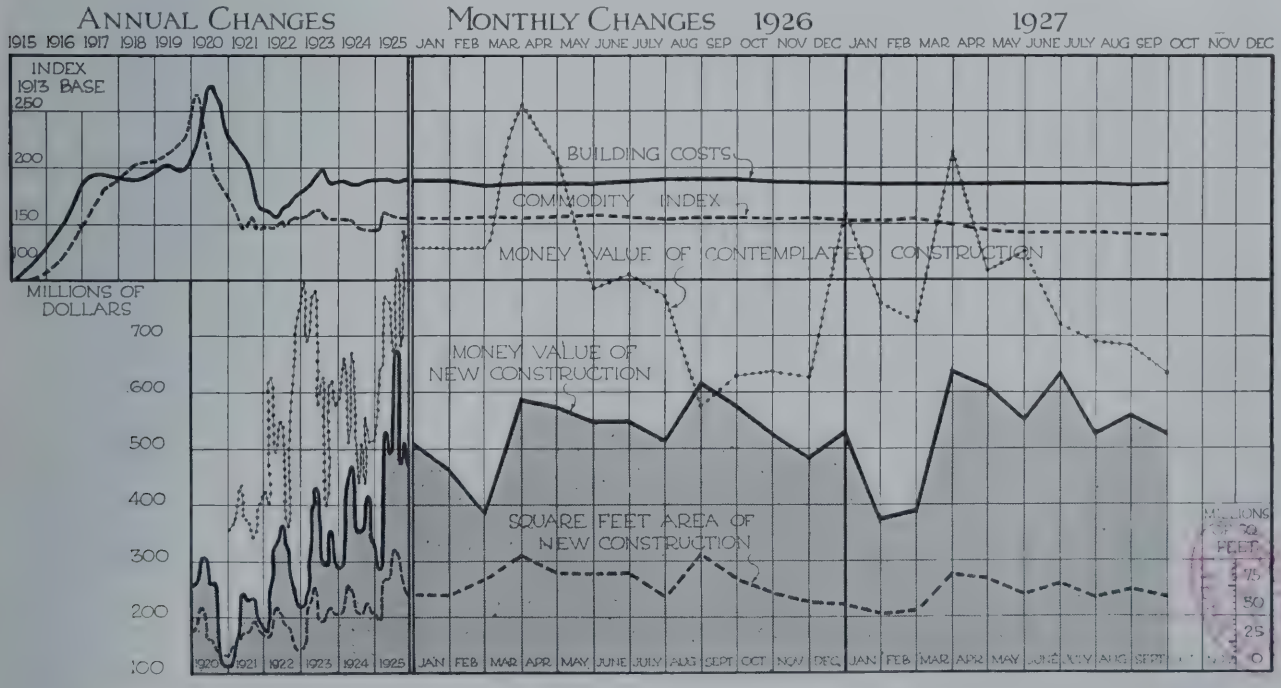
THE BUILDING SITUATION

A MONTHLY REVIEW OF COSTS AND CONDITIONS

THE chart included here indicates the record of construction activity through September of this year. The month of August, according to figures of the F. W. Dodge Corporation, indicates in the 37 states east of the Rocky Mountains new construction contracts totaling $552,487,900. This figure is approximately 8 per cent under the amount reported in August of last year, but it is explained that in each of the years 1925 and 1926 there was just one month with a contract total of six hundred million dollars or over. In both of those years that peak month was August. This year three months have shown over six hundred million dollars,—March, April and June. Obviously, it might be expected that August did not run so high because of the great preceding volume during this year, and it will be noted that August has registered the anticipated increase over July. An interesting fact about the figures is that the record of plans filed for new construction for the month of August shows a 21 per cent increase over that reported in August of 1926.

All indications point to the fact that there will be a fairly active movement in new construction during the fall and winter of this year, retaining the stability which the industry has been showing for some time. Of course there have been building declines in various sections of the country, including the New England states, the Northwest, and particularly the Southeast. Texas has also shown some decline as compared with the activity of last year. On the other hand, the New York area shows activity approximately equal to that of last year; the Middle Atlantic states show a gain of about 18 per cent; the Pittsburgh district is about equal to last year; and the Central West shows a gain of approximately 12 per cent,—all these comparative figures covering the period of the first eight months of this year as compared to the similar period of 1926. The September figures just received show contracts let amounting to $521,611,000, bringing the total for the first 9 months within 1 per cent of the same period last year.

General business activity is at least maintaining its own, if not increasing. The labor situation continues on a fairly stable basis, with labor rates being maintained at comparatively high levels, but with labor production on buildings reasonably satisfactory both as to quality and volume. Architects are suddenly reporting unusual activity as we enter the fall months, and in all sections of the country where gain in construction activity is indicated, offices are busy.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Corp., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the left of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the right of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined, first by the trend of building costs, and second, by the quality of construction.

EXTERIOR

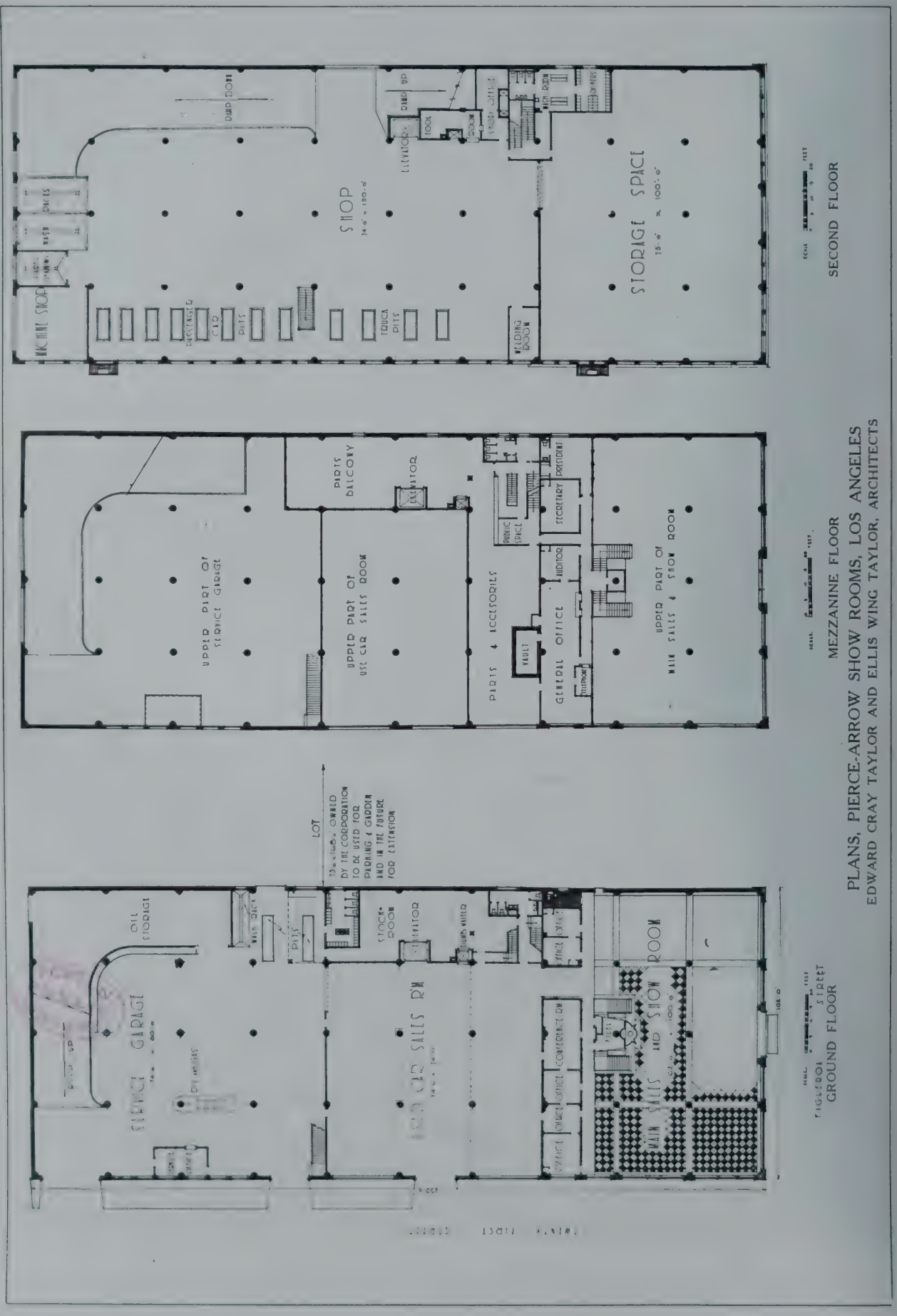
INTERIOR

PIERCE-ARROW SHOW ROOMS, LOS ANGELES

EDWARD CRAY TAYLOR AND ELLIS WING TAYLOR, ARCHITECTS

Photos. Mott Studios

DETAIL OF FOUNTAIN, PIERCE-ARROW SHOW ROOMS, LOS ANGELES
EDWARD CRAY TAYLOR AND ELLIS WING TAYLOR, ARCHITECTS



PLANS, PIERCE-ARROW SHOW ROOMS, LOS ANGELES
EDWARD CRAY TAYLOR AND ELLIS WING TAYLOR, ARCHITECTS

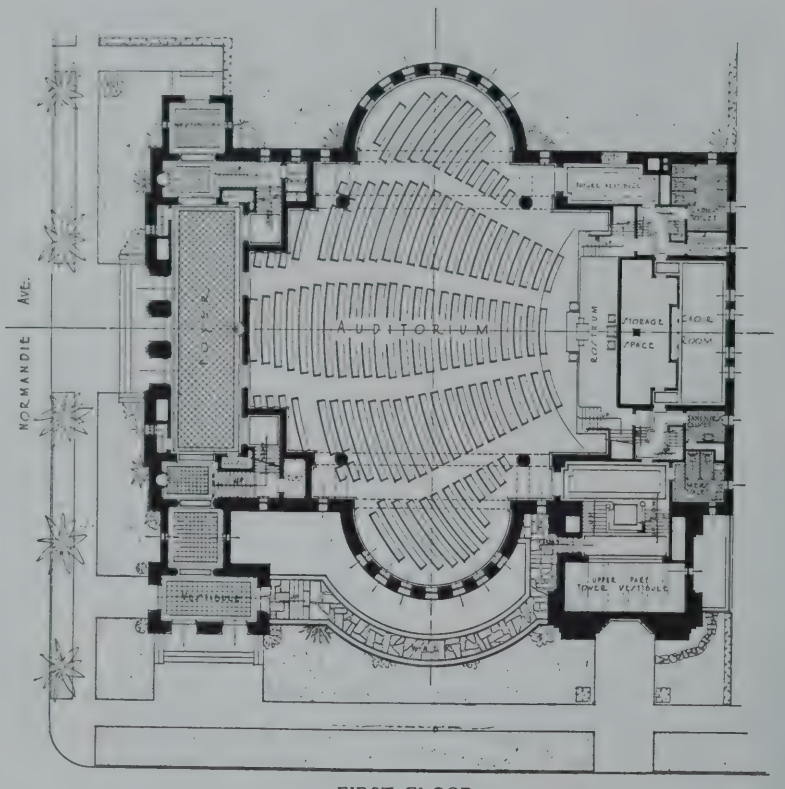
GENERAL VIEW

Photos, Albert E. Cawood *Plans on Back*

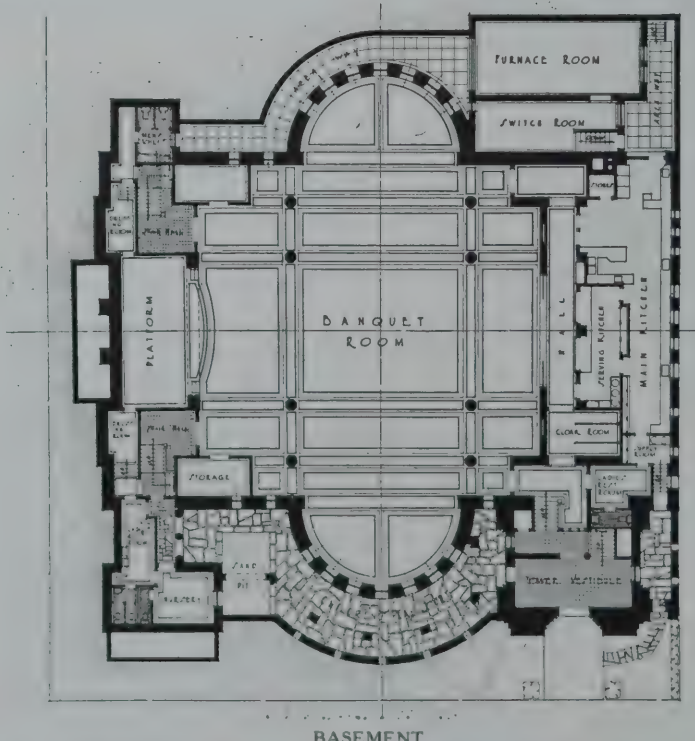
THE GALLERY

WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES

ROBERT H. ORR, ARCHITECT

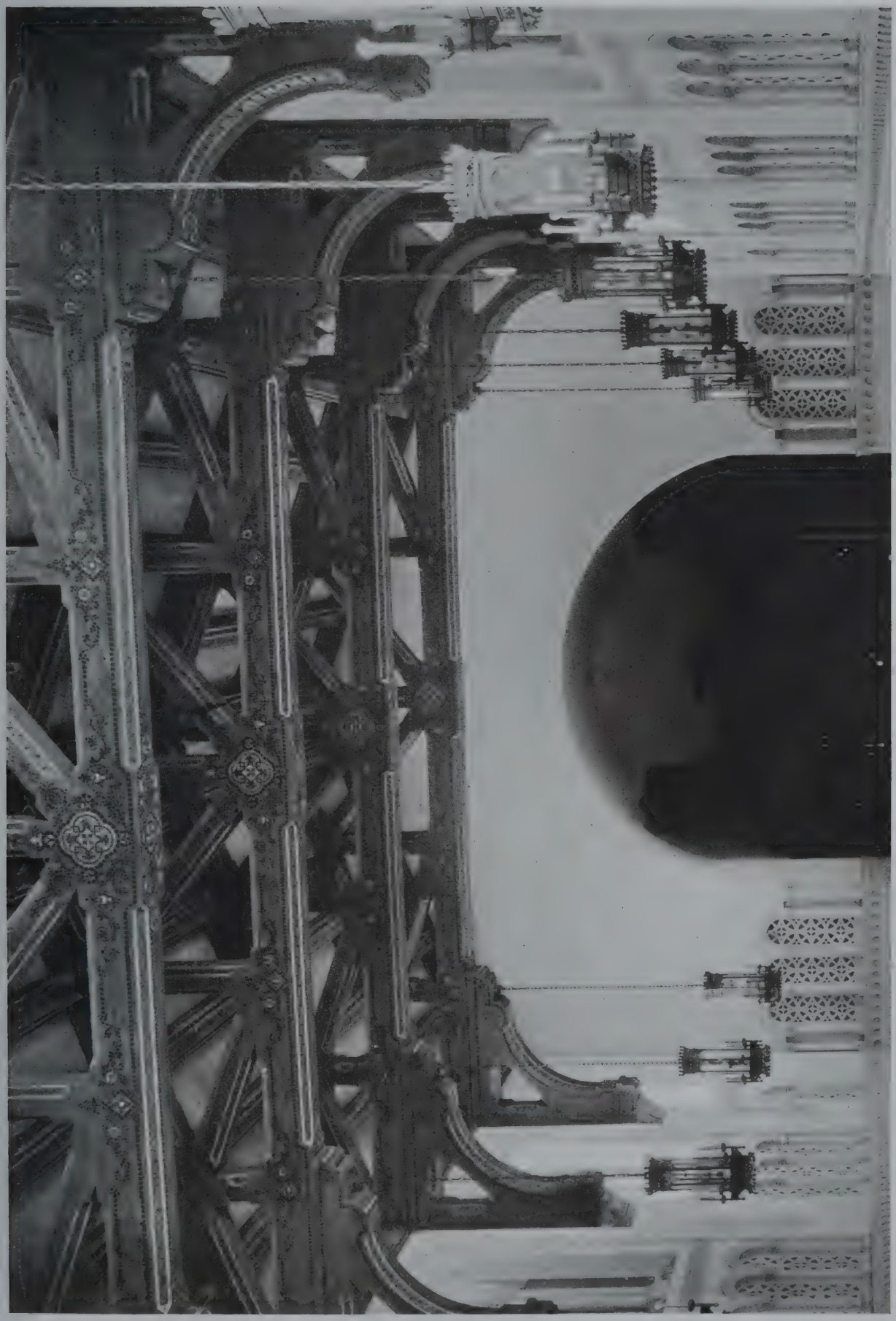


FIRST FLOOR



BASEMENT

PLANS, WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES
ROBERT H. ORR, ARCHITECT

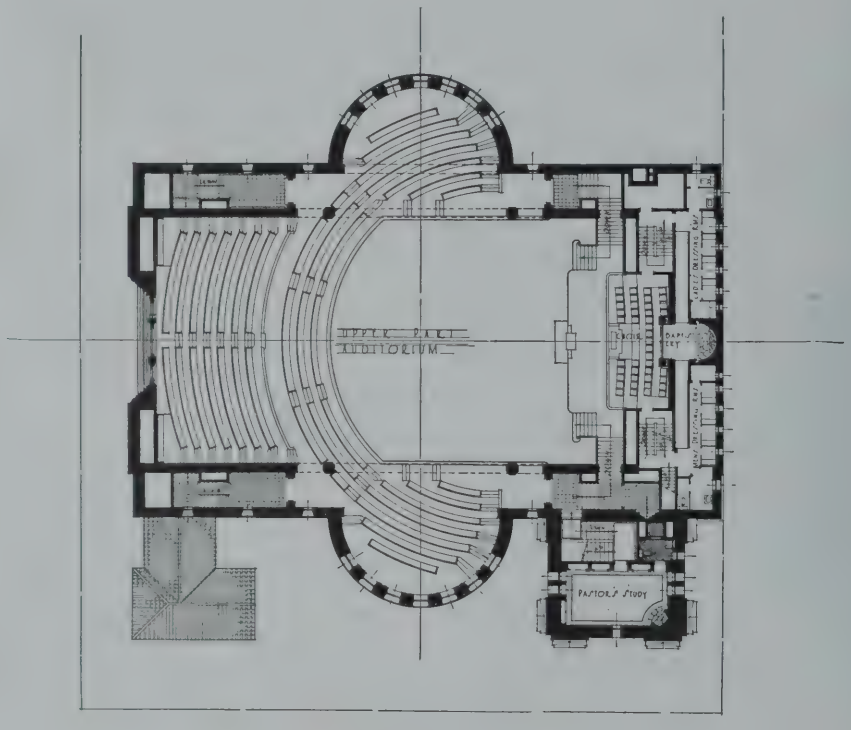


Plan on Back

UPPER PART OF AUDITORIUM

WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES

ROBERT H. ORR, ARCHITECT



BALCONY FLOOR

PLAN, WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES

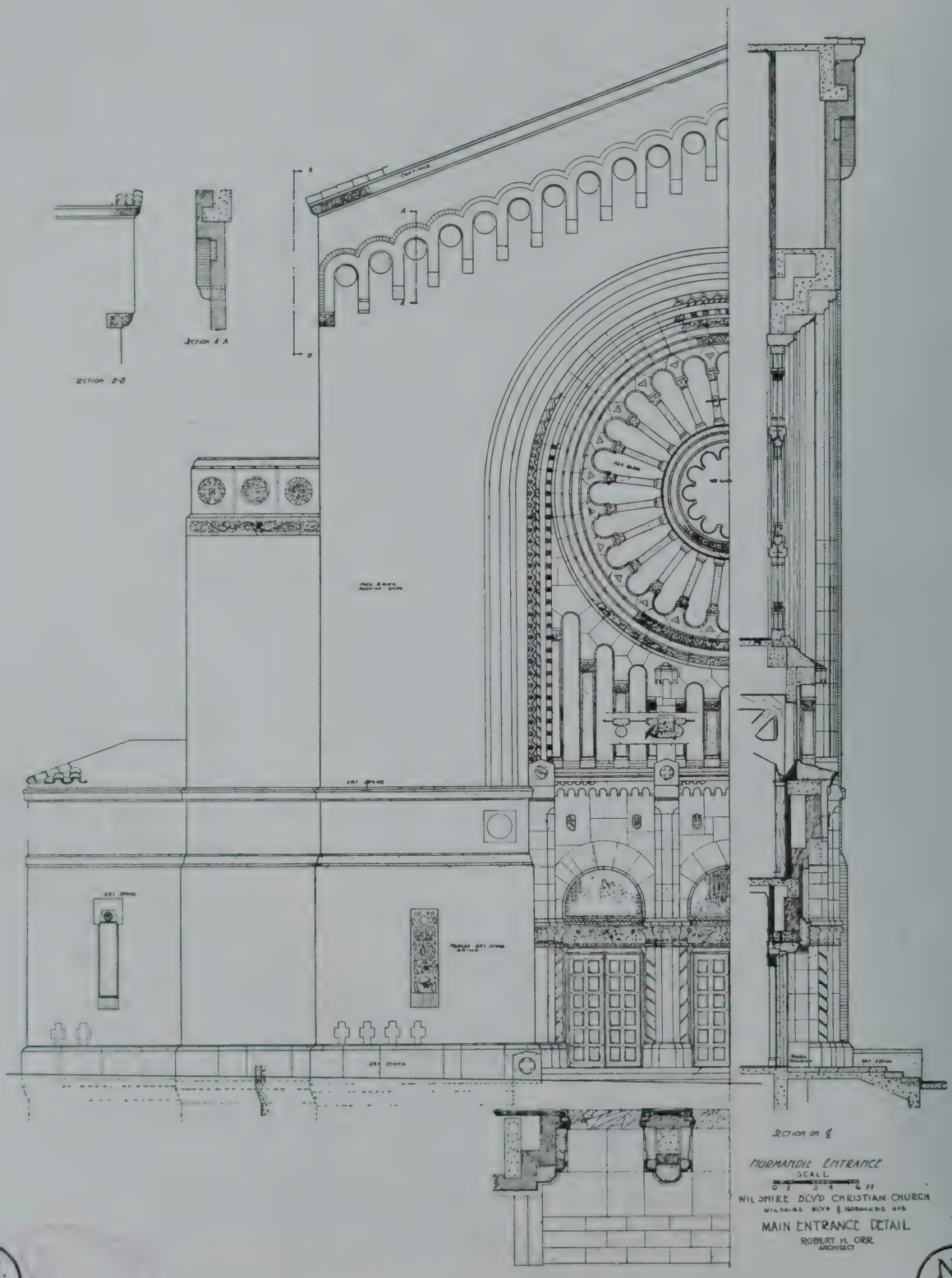
ROBERT H. ORR, ARCHITECT

Detail on Back

MAIN ENTRANCE

WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES

ROBERT H. ORR, ARCHITECT



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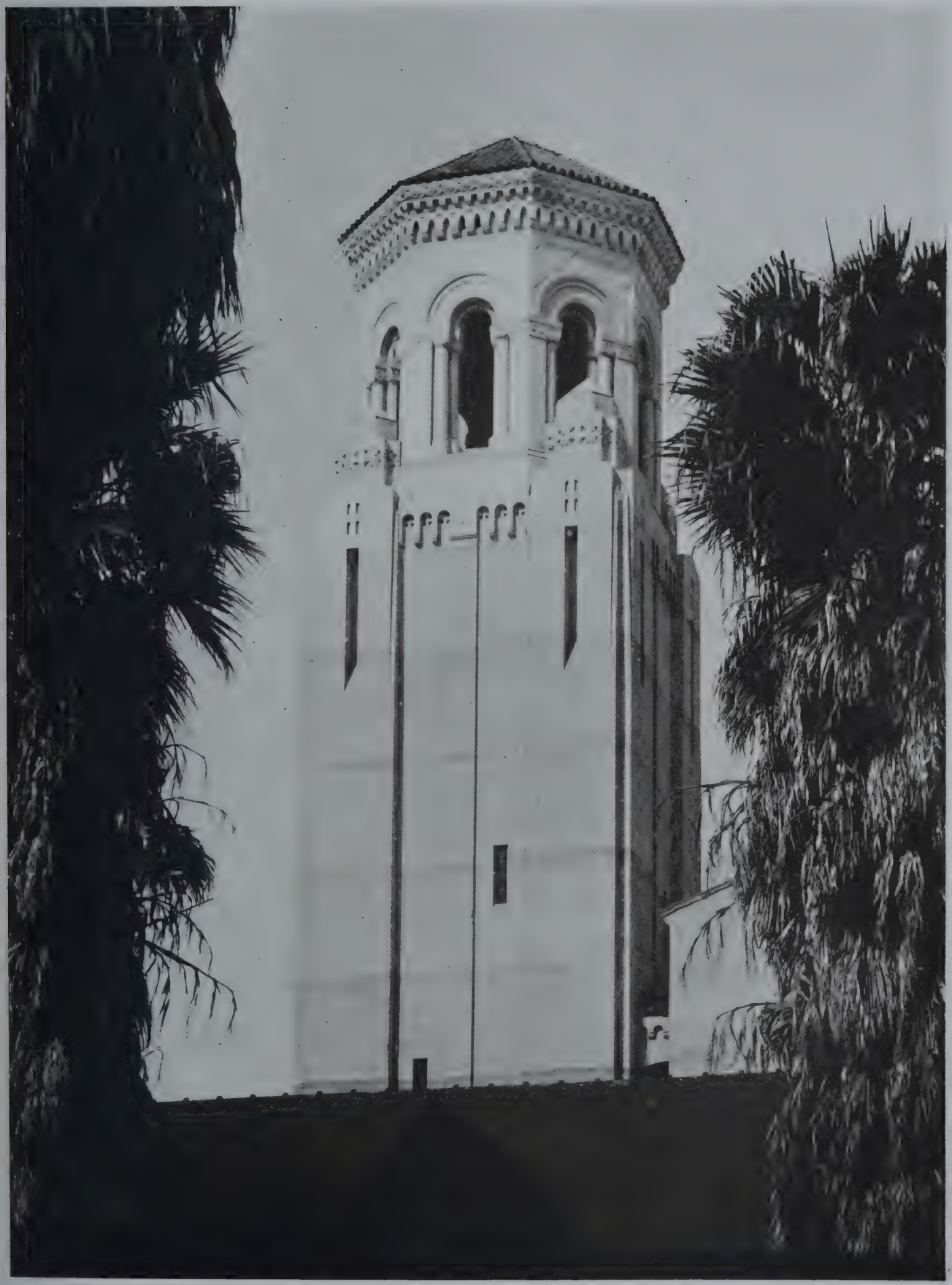
The Architectural Forum Details



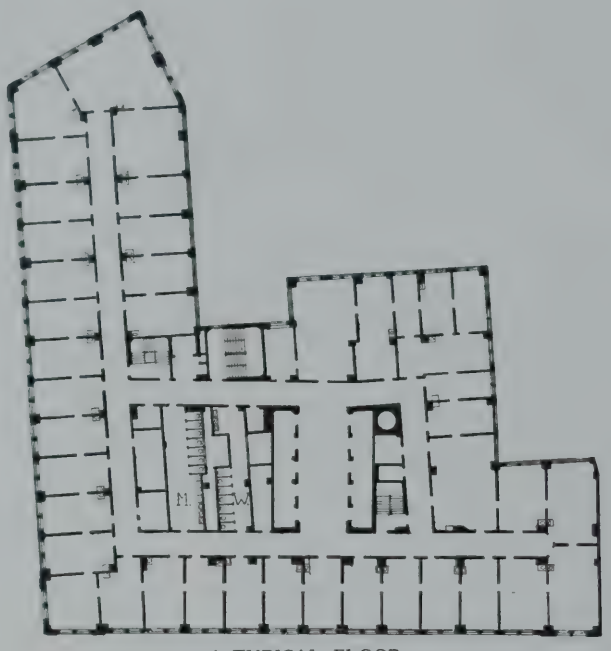
THE TOWER
WILSHIRE BOULEVARD CHRISTIAN CHURCH, LOS ANGELES
ROBERT H. ORR, ARCHITECT

Photos. Arthur C. Haskell

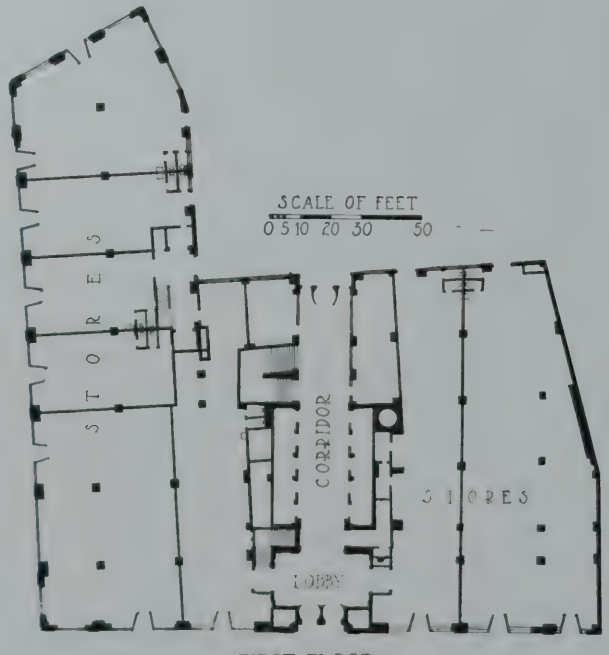
Plans on Back

BOSTON CONSOLIDATED GAS COMPANY BUILDING

PARKER, THOMAS & RICE, ARCHITECTS



A TYPICAL FLOOR



FIRST FLOOR

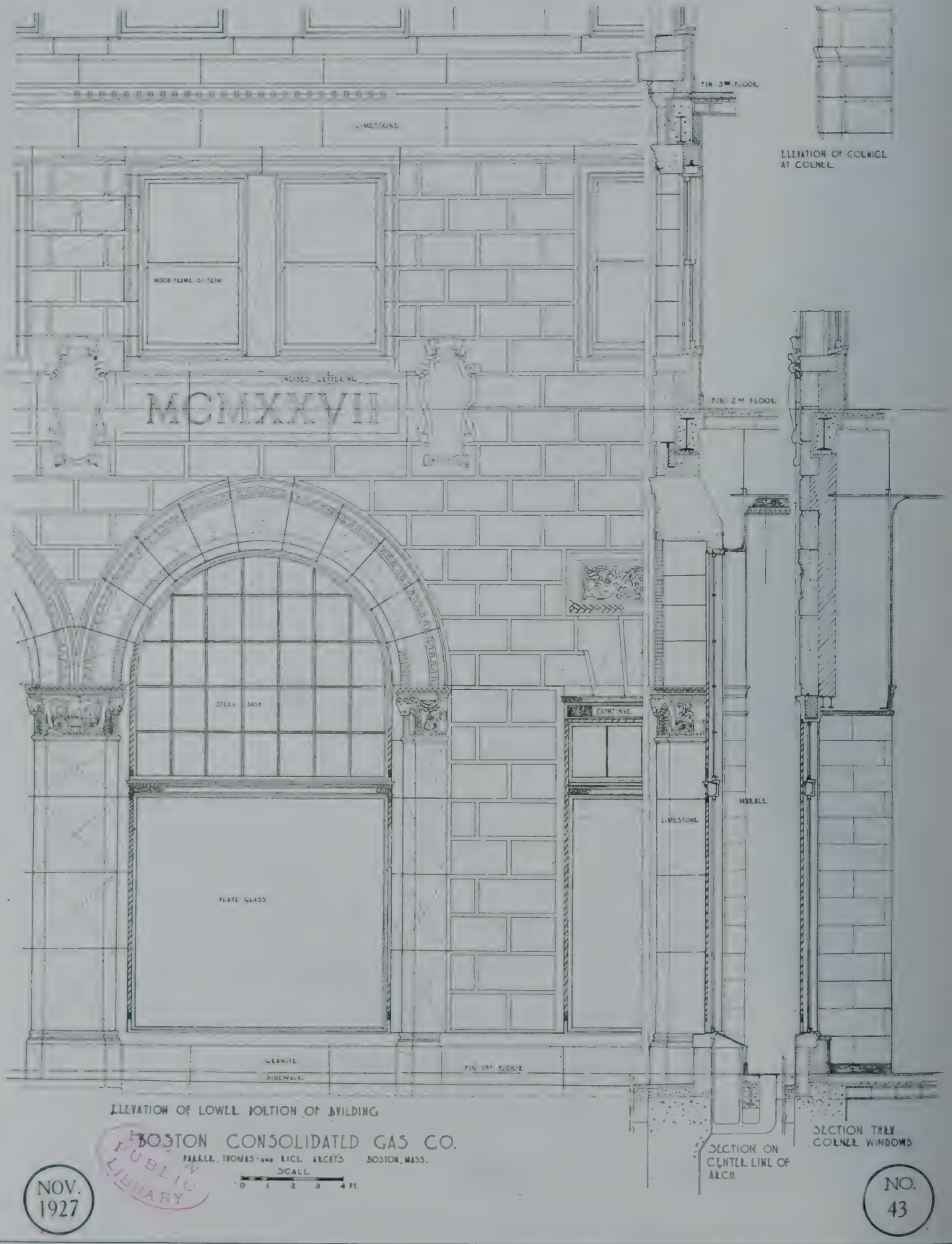
PLANS, BOSTON CONSOLIDATED GAS COMPANY

PARKER, THOMAS & RICE, ARCHITECTS

Detail on Back

SIDE ENTRANCE, BOSTON CONSOLIDATED GAS COMPANY BUILDING

PARKER, THOMAS & RICE, ARCHITECTS



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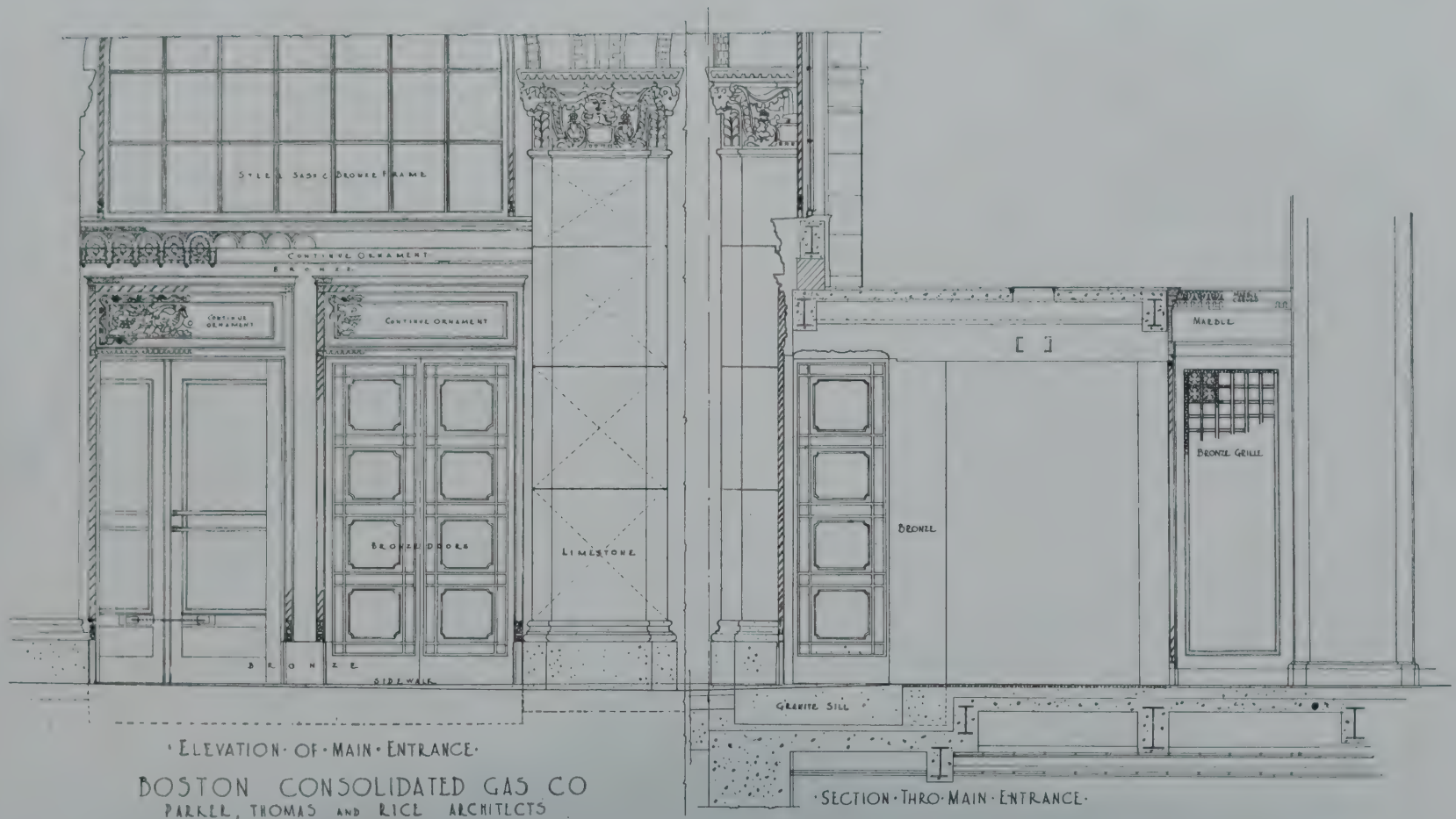
Detail on Back

MAIN ENTRANCE, BOSTON CONSOLIDATED GAS COMPANY BUILDING

PARKER, THOMAS & RICE, ARCHITECTS



·ELEVATION·OF·MAIN·ENTRANCE·

·SECTION·THRO·MAIN·ENTRANCE·

BOSTON CONSOLIDATED GAS CO

PARKER, THOMAS AND RICE ARCHITECTS

BOSTON MASS

SCALE

0 1 2 3 4 FT.

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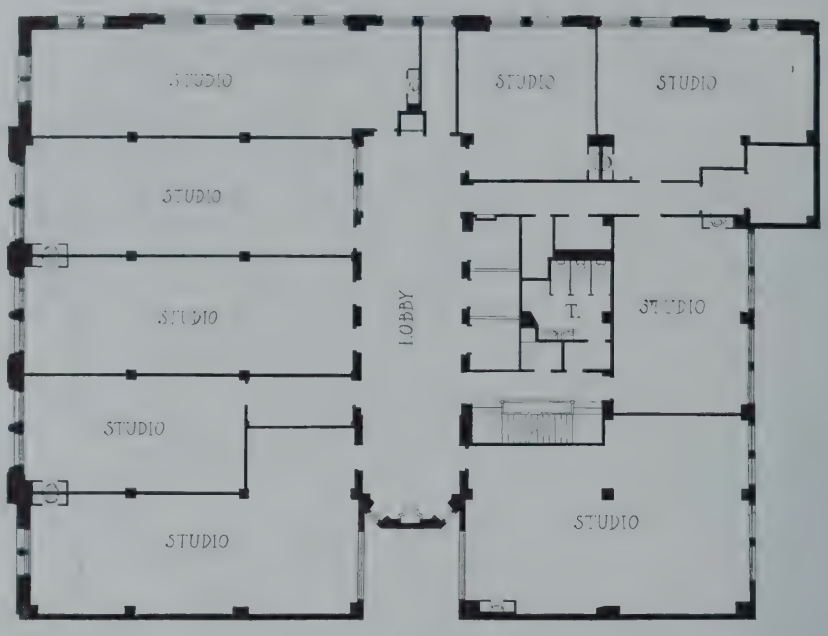
INTERIOR, BOSTON CONSOLIDATED GAS COMPANY BUILDING
PARKER, THOMAS & RICE, ARCHITECTS

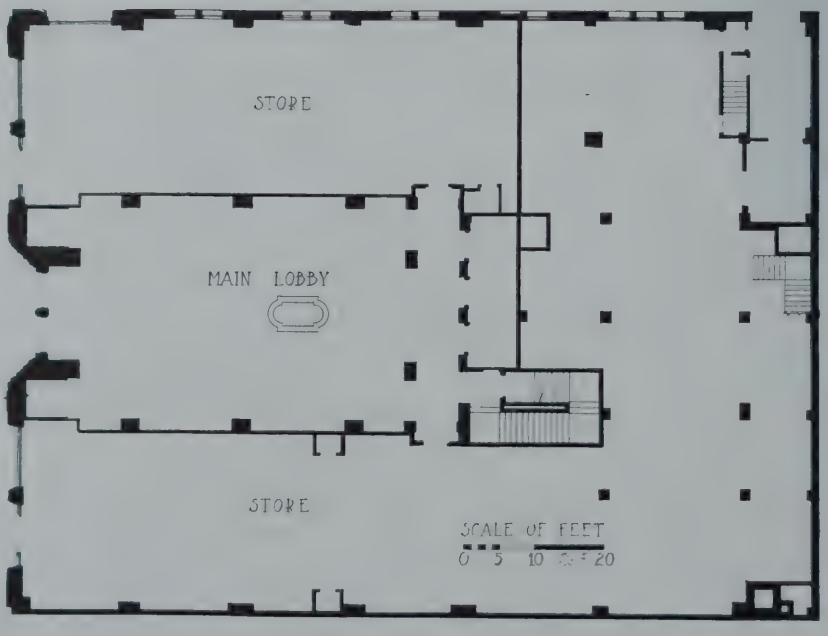
Plans on Back

FINE ARTS BUILDING, LOS ANGELES

WALKER & EISEN, ARCHITECTS

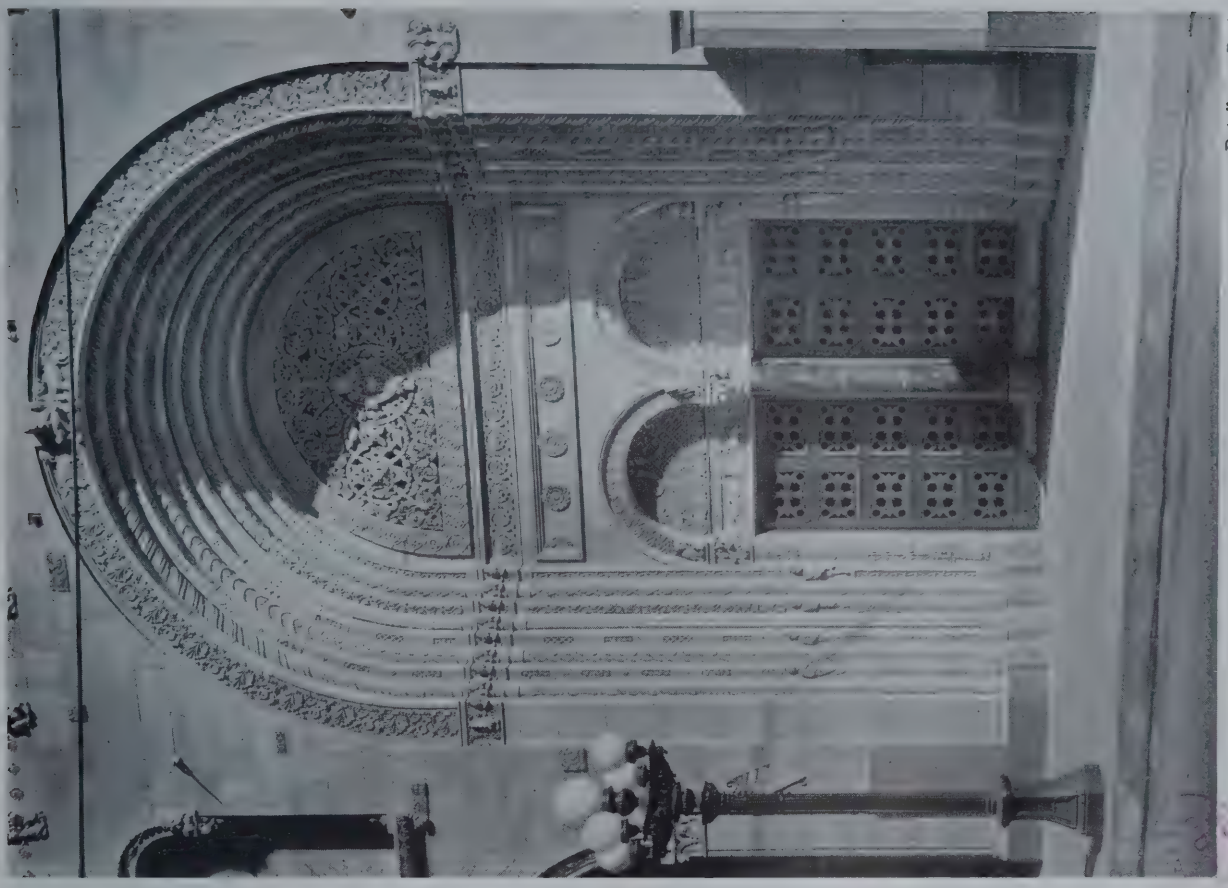


A TYPICAL FLOOR

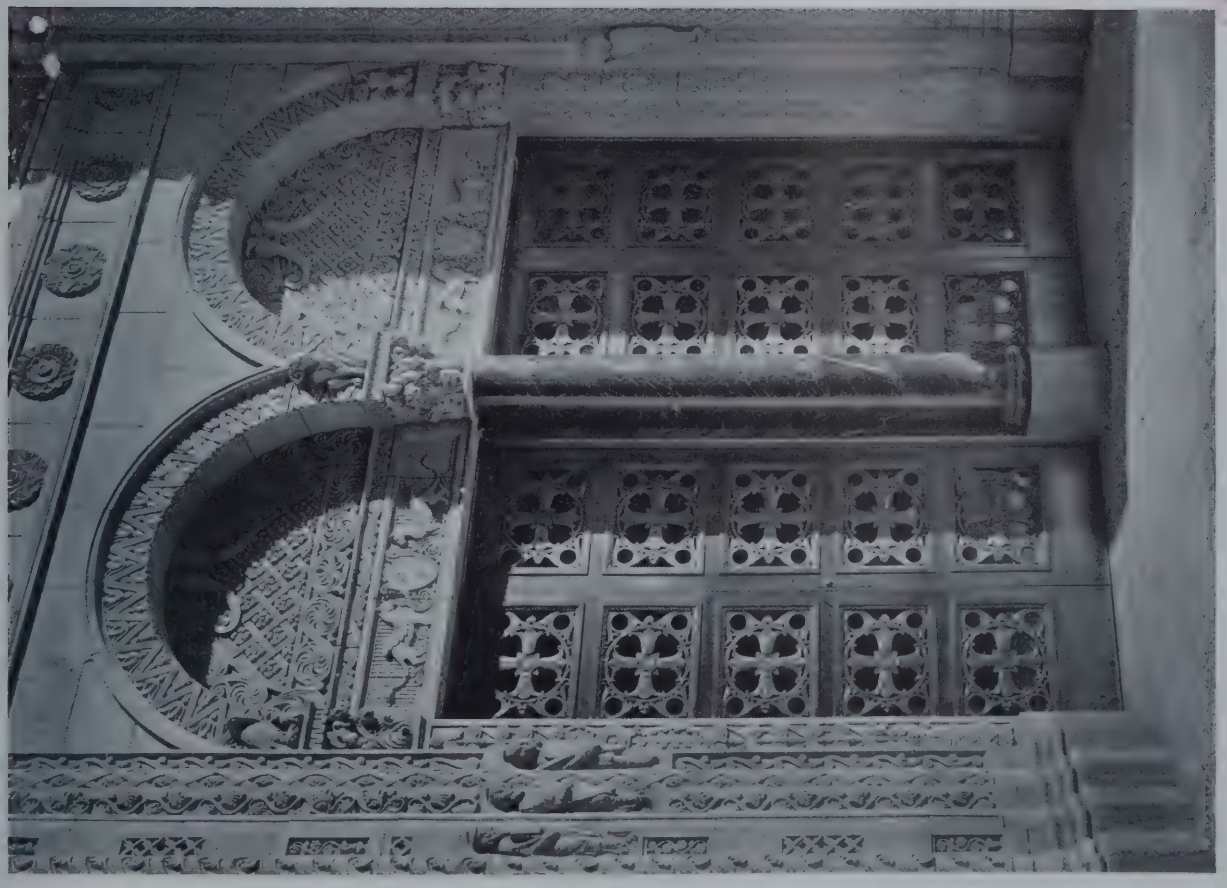


FIRST FLOOR

PLANS, FINE ARTS BUILDING, LOS ANGELES
WALKER & EISEN, ARCHITECTS



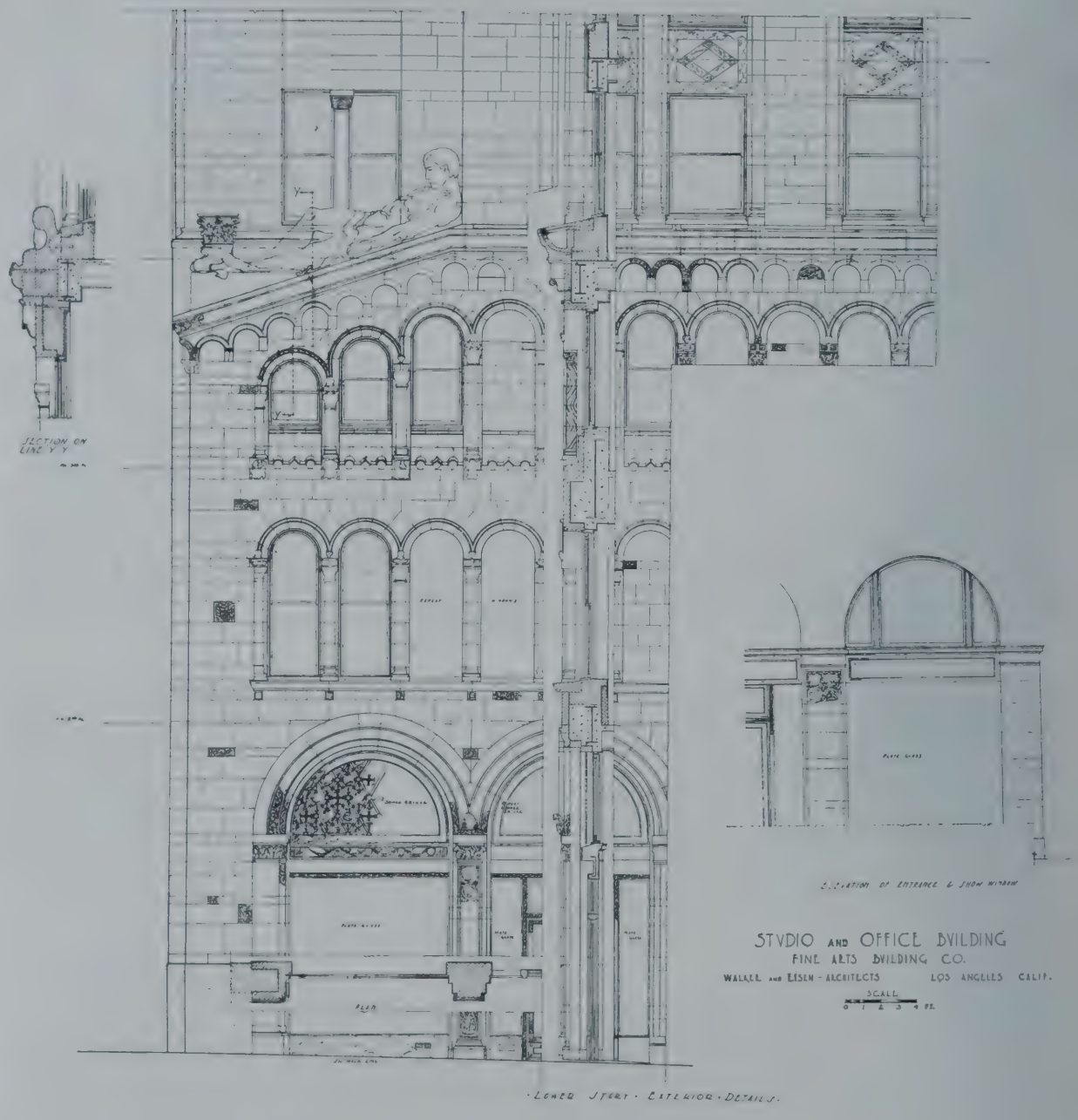
MAIN ENTRANCE



DETAIL OF DOORWAY

FINE ARTS BUILDING, LOS ANGELES
WALKER & EISEN, ARCHITECTS

Details on Back



· LOWER STORY · EXTERIOR · DETAILS ·

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The Architectural Forum Details

ELEVATOR LOBBY, FINE ARTS BUILDING, LOS ANGELES
WALKER & EISEN, ARCHITECTS

THE ARCHITECTS' FORUM

On Use of Color in Commercial Architecture

By SAMUEL HOWE

POSSIBLY American architecture, which has triumphed in many fields since first it undertook to add to our buildings the scholarly detail of the Classic, the Renaissance, and the Gothic, is seen at its best in the skyscraper. But the skyscraper demands special treatment. Consequently, we are by no means alarmed by the fact that the Building Department has robbed us of projections, though it did this without any great consideration of æsthetic effect, but from the necessity of insuring a maximum of light for the streets and the lower stories of buildings. This bold, free action has left the architect in a difficult position. At the same time, it is exactly the position in which the man of the world desires to see him at the moment. The solution of the problem is well shown in the fine buildings, now lining our thoroughfares, which do not at all times come strictly under the classification of "cloud-ticklers," as the Germans term them, or skyscrapers in the nomenclature of our own land. Is it not the fearless handling of the modernist that is here needed? Thanks to the engineer, to the limitations of zoning laws and local conditions, to the breadth or narrowness of our streets and to the demands of real estate operators and owners, the architect is compelled to build to the maximum capacity of the lot, and the "set-back," which we are delighted to see, is the result. The set-backs form terraces which in some cases, where they have been developed in a number of family hotels and apartment houses, can well be classed as "hanging gardens."

Robbed of his projections, his cornices and entablatures, the very stuff upon which he has fed all his life, the architect has but two main sources of decoration left,—texture and color. How is the architect going to tell off-hand the influence of light upon color? And just how is the color to be applied? The artists of the 10-inch brush have here no place. It is work for the ceramist. Here are glaze and metallic oxides. Here are chemical compositions, which delight us so much, which must be fired upon clay, in the form of brick or tile. Some of it in our loose vocabulary is called architectural terra cotta. Call it what you will,—it is the ceramist who must be the saver of the situation. Certainly that means a knowledge of color. The laws of harmony and contrast are involved. Whichever way you look at the problem, you must see color, not as seen and devised in the drafting room, but color hundreds of feet up in the air. And this must be used with the knowledge that, however entertaining our adventure may be, we must provide for the diversified and ever-exacting nature of our climate. It is largely a matter of experiment. To prepare for this it is all very easy and natural for us to be told off-hand to go to China, or to Russia, or to northern Italy. Some attempt to remind us that even in our own cities, the southern cities like Charleston, we can get, kindergarten fashion, a hint as to the use of color worth accepting. Text books have much to say about the influence of light upon blue, green, orange, yellow, red, when viewed from near or at a distance. But what text book tells of the influence of the thin veiling of soot, which neutralizes much, emphasizes more, and kills jewels we would preserve?

The Woolworth Building is a case in point. We like it so much as it is that we are not at all disturbed to hear of the architect's discussion with the owner as to the wisdom of applying soap and water. Yet it is consoling to think that as a remedy they could easily be applied. Louis C. Tiffany advises us to avoid dark colors and to use tones that are light when seen against the sky, while Alexander B. Trowbridge tells us to consider one or two of the newer buildings on Fifth Avenue and beware. I, too, find myself opposed to the type of skyscraper design which, as one critic recently said, looks like a series of packing boxes, placed one on top of another. However, the one redeeming feature of these buildings is the use of color, which although not entirely successful, is, I believe, a step in the right direction. Hubert G. Ripley of Boston considers the American Radiator Building, whether seen in the morning mists or illuminated at night, one of the most beautiful sights in the world. Whether the color effect will last for much more than 10 or 15 years, he thinks is a question. It is only in the tropics, he says, that buildings look well at noontime. Here are many structures in our midst at which we can look, and applaud as being a step in the right direction, or else condemn them as failing to utilize color as it should be used in architecture.

Most architects when approached on the subject say it is up to the owner. The owner replies that the material is at fault. What shall the material be? Have we not tried glazed brick, tile, terra cotta, marbles, stones, paints and metals? And with the use of each of these materials have we not found causes for dissatisfaction? So the buck is passed from one man to another. There is no limit to the

difficulties under which the architect and colorist labor. As Whitney Warren has said, "it is sunshine which we want in place of gloom in our streets. We want anything that will contribute to the gaiety and pleasure in life," and then, with an expressive gesture, he held well beyond the reach of any but a 6-foot giant, a photograph from a model of a tower shortly to be added to the new skyline of the city. "This last adventure of mine," he said, "is of a brick which will doubtless promote discussion,—as in the case of the Vanderbilt Hotel,—a brick the complexion and color of the glorious cheek of a California girl. Yes, her rosy face will add the necessary tone and texture. She will be crowned with a *chapeau* of gold, or of copper trimmed with gold."

We should regret to have to say that the well meaning architect of our favored land has neither the ability nor the imagination necessary to undertake the task of solving the problem of color in architecture, but apparently the architect often lacks the courage of his convictions, which he must have in order to convince and persuade a client. He who hesitates is lost. We want and need a leader, someone who has gumption to go ahead and do something.

We are exceedingly grateful for J. Monroe Hewlett's opinion that the architects should get together and decide what color shall prevail, that is, what material shall give the prevailing tone to the entire color mass for the whole block; that the interest should be in the building as a whole, or rather the block as a whole, rather than to try to win the attention of the public by a subtle division of the upper story, wherein green, blue and yellow compete with each other, in broad horizontal bands at irregular intervals. Mr. Hewlett is not prepared to say that we should have a red block or a brown block, or a blue block, but he thinks that the men in general architectural practice would be wise to study by the block, and by the mass, and not belittle the opportunity by toying with the skyline on every occasion.

Chester H. Aldrich, tells us that this color idea for the skyscraper is excellent. He approves heartily, yet agreeing that of course it is a matter of ceramics of some description or other, either in the form of coated terra cotta or of colored tile,—tile by preference, because it is more liberal in its color qualities and possibilities. The modernists' recent color contribution to the subways of New York is worthy of regard. Here color has been concentrated to catch the public's attention and requirements. Let us hope that this successful and pleasing use of color to serve the practical purpose of identifying subway stations in passing may serve as a precedent and an inspiration for the larger use of color in the adornment and beautification of our urban architecture, whether it be commercial, domestic or monumental.

Photo. P. A. Nyhelm

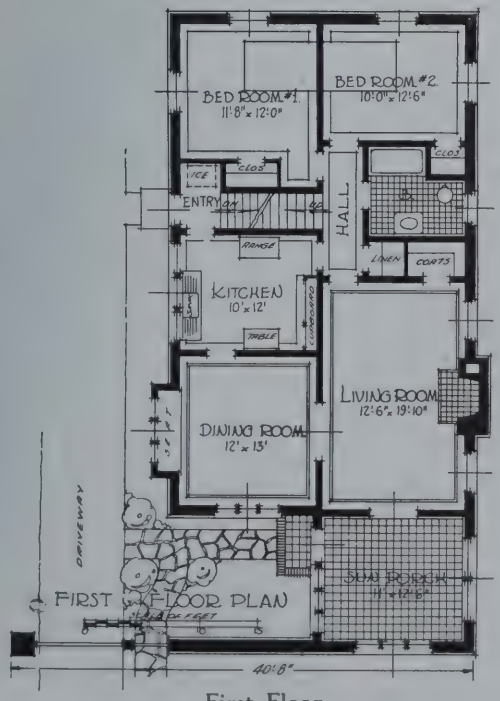
Ornament in Color, French Building, New York

Fred F. French Co., Architects

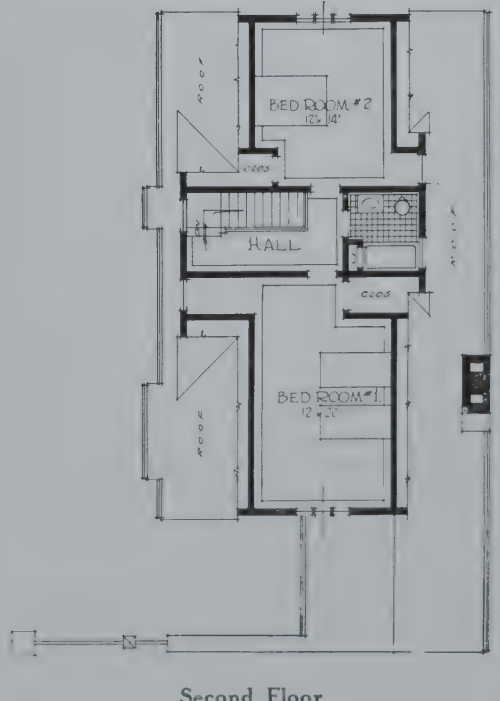
HOUSE OF W. G. WILKINSON, ESQ., WESTFIELD, N. J.
R. C. HUNTER & BRO., ARCHITECTS

SMALL BUILDINGS

HOUSE OF W. G. WILKINSON, ESQ., WESTFIELD, N. J.
R. C. HUNTER & BRO., ARCHITECTS



First Floor



Second Floor

FORUM SPECIFICATION AND DATA SHEET—205

House of W. G. Wilkinson, Esq., Westfield, N. J.
R. C. Hunter & Bro., Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Hollow tile, timber floor and roof construction.

ROOF:
Wood shingles.

WINDOWS:
Steel casements.

FLOORS:
Oak.

HEATING:
Steam.

PLUMBING:
Complete; water, sewer, etc.

ELECTRICAL EQUIPMENT:
Complete lighting.

INTERIOR MILLWORK:
Oak.

INTERIOR WALL FINISH:
Rough plaster.

INTERIOR DECORATIVE TREATMENT:
Light tinted walls and ceilings; stained trim.

APPROXIMATE CUBIC FOOTAGE:
29,700.

COST PER CUBIC FOOT:
48 cents.

DATE OF COMPLETION:
December, 1926.

THIS is an excellent example of a small house possessing originality and charm, the exact style of which is difficult to determine. It suggests somewhat the architectural trend today in the design of small houses in England. The use of brick for the window reveals, sills and lintels, gives a touch of color to contrast with the white painted stucco walls. This use of brickwork is whimsical rather than picturesque and adds an amusing rather than a serious note to the character of the design. The planting about the house is an important note in the picture. The dark cedars, small pines and hemlocks look well against the white walls. The form of the house is a long rectangle, so arranged that it is possible to include two bedrooms and a bath at one end of the first floor. The house is entered through a small forecourt upon which opens the sun porch. This porch has much the effect of a large, well lighted vestibule, as it has on three sides casement windows which may be closed in bad weather. From the living room open the dining room and hallway, the latter leading to the two bedrooms.

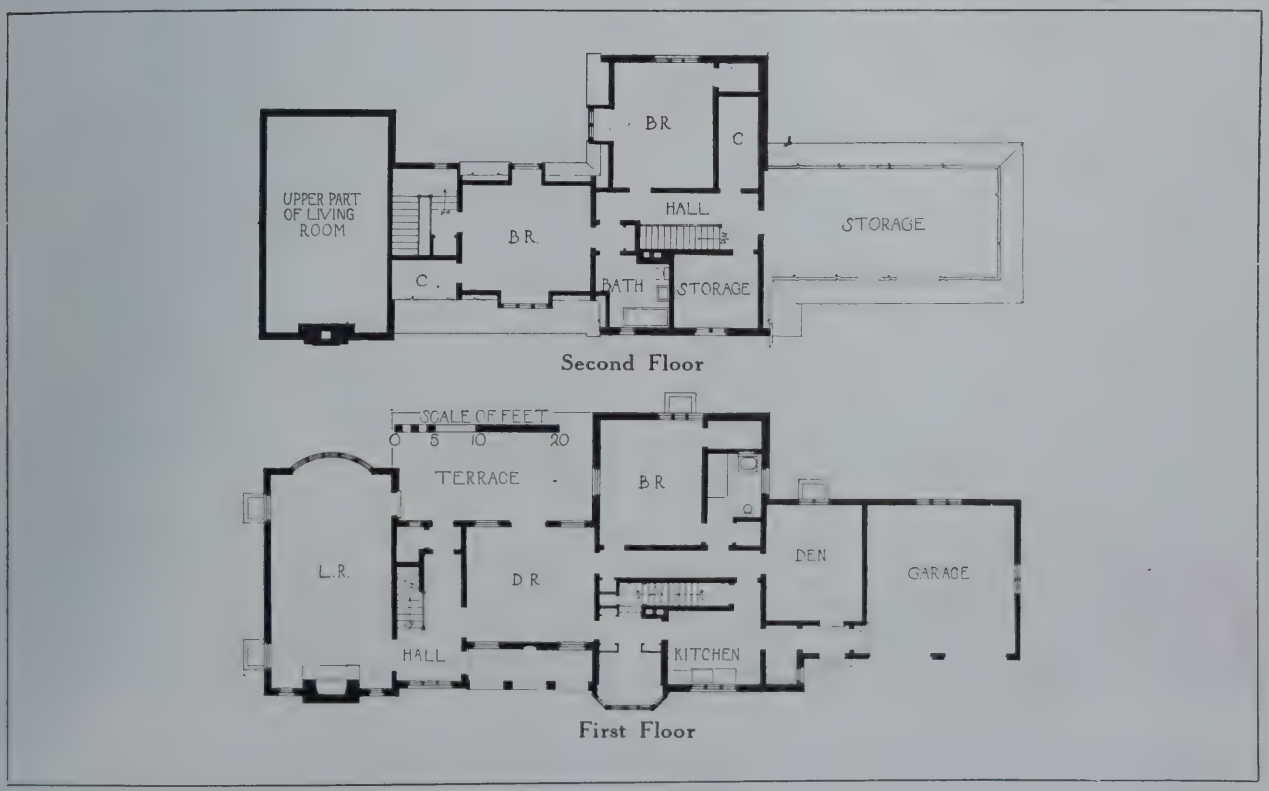
Entrance, House of W. G. Wilkinson, Esq., Westfield, N. J.
R. C. Hunter & Bro., Architects

Photos. Richard Southall Grant

HOUSE OF JOHN TRITTEN, ESQ., UTICA, N. Y.

KINNE & FRANK, ARCHITECTS

THIS illustration shows the front elevation of this small brick country house. The arcade with three openings marks the entrance to the house, at the right of which there is the small bay window of the breakfast room. Although a two-story house, the roof is carried down sufficiently low to give the impression of a story and a half. The tall living room chimney at the left of the front elevation serves to balance the high gable of the service end of the house. The large living room, which occupies the entire



FORUM SPECIFICATION AND DATA SHEET—206

House of John Tritten, Esq., Utica, N. Y.
Kinne & Frank, Architects

OUTLINE SPECIFICATIONS

EXTERIOR MATERIALS:
Brick.

ROOF:
Slate.

WINDOWS:
Wood sash and casements.

FLOORS:
Oak.

HEATING:
Vapor steam.

INTERIOR MILLWORK:
Pine, enameled.

INTERIOR WALL FINISH:
Semi-rough, glazed.

APPROXIMATE CUBIC FOOTAGE:
52,321.

COST PER CUBIC FOOT:
51 cents.

DATE OF COMPLETION:
April, 1926.

wing, is open to the rafters. The dining room, which is located at the middle of the house, has windows on two sides. On the garden side the windows open onto a flagged terrace. In addition to the main rooms and the service department there are on the first floor a bedroom and bath and a room called the "den," which opens into the passageway leading to the garage. These rooms make an excellent bachelor suite. On the second floor two large bedrooms, a large bath, store room and a spacious closet occupy the center portion of the house. This second floor is reached not only by the main stairway but also by a service stairway. It is possible, therefore, that one of these bedrooms may be for the use of servants. The design as a whole shows a straightforwardness and purpose devoid of any attempt at the bizarre.

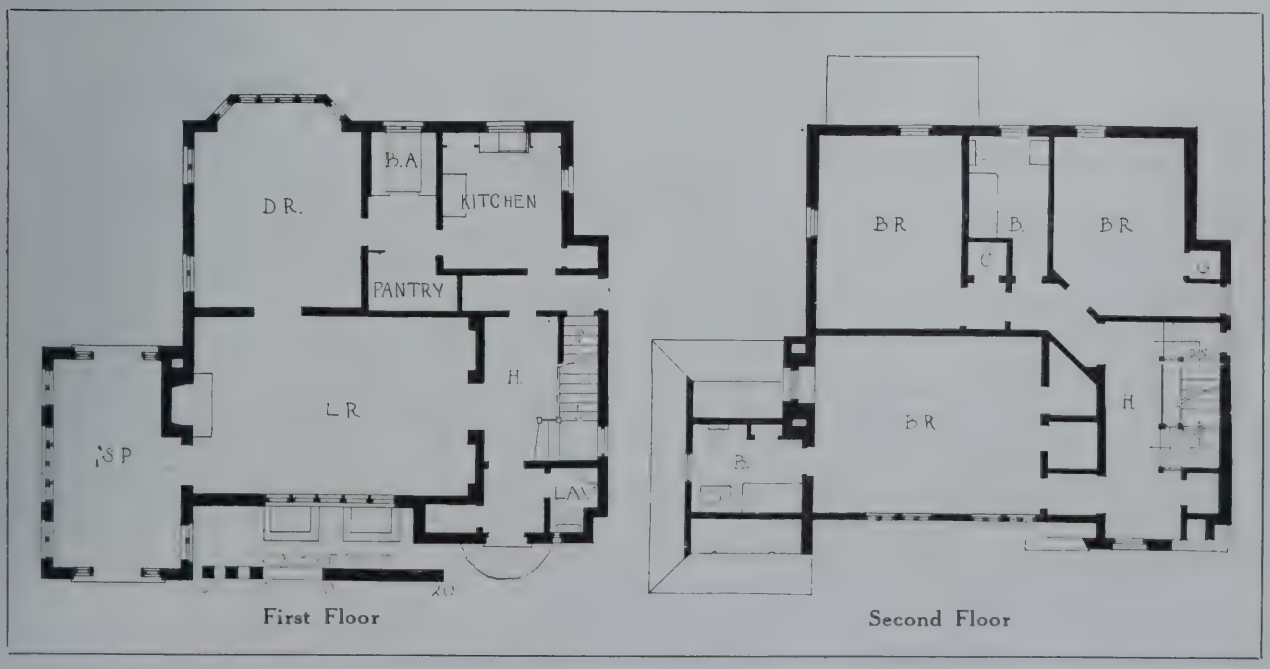
Terrace

Living Room

House of John Tritten, Esq., Utica, N. Y.
Kinne & Frank, Architects

HOUSE OF JAMES CASSIDY, ESQ., FOREST HILLS, N. Y.
THOMAS C. ROGERS, ARCHITECT

ALTHOUGH square in plan, this small house in stucco and half-timber has the appearance of length. This effect is obtained through the treatment of the sun porch at one end of the house, over which a high gabled roof has been carried up, similar in slope to the roof of the main house. The overhang of the second floor gives a line of shadow which still further heightens the horizontal rather than the vertical effect of the design. The entrance door is placed in a gabled wing at the left of the front elevation. This entrance door leads into a vestibule, off of which open a lavatory and coat



First Floor Second Floor

FORUM SPECIFICATION AND DATA SHEET—207

House of James Cassidy, Esq., Forest Hills, N. Y.
Thomas C. Rogers, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Terra cotta tile and frame.

EXTERIOR MATERIALS:
Stucco, brick and wood trim.

ROOF:
Tile.

WINDOWS:
Casement and double-hung, wood.

FLOORS:
Clear white oak; porch, tile.

HEATING:
Vacuum steam system.

PLUMBING:
Fixtures and brass pipe.

INTERIOR MILLWORK:
Living portion in oak; bedrooms and service portion in white wood.

INTERIOR WALL FINISH:
Plaster.

INTERIOR DECORATIVE TREATMENT:
Rough-textured walls with dark oak woodwork in living portions; bedrooms in stippled paint.

APPROXIMATE CUBIC FOOTAGE:
40,000.

COST PER CUBIC FOOT:
70 cents.

DATE OF COMPLETION:
February, 1925.

closet. Back of the entrance vestibule is a stair hall. The living room occupies the center portion of the first floor. Into this room the sun porch opens at one end and the dining room at the side. Between the dining room and the kitchen is a combination pantry and breakfast alcove. The plan is convenient and logical and sufficiently original to be interesting. The very high roof makes possible three excellent bedrooms and two baths on the second floor. The high pitched roofs of the farmhouses of northern France afford a precedent when rooms of some height are desired on the second floor of a small house.

Garden Front

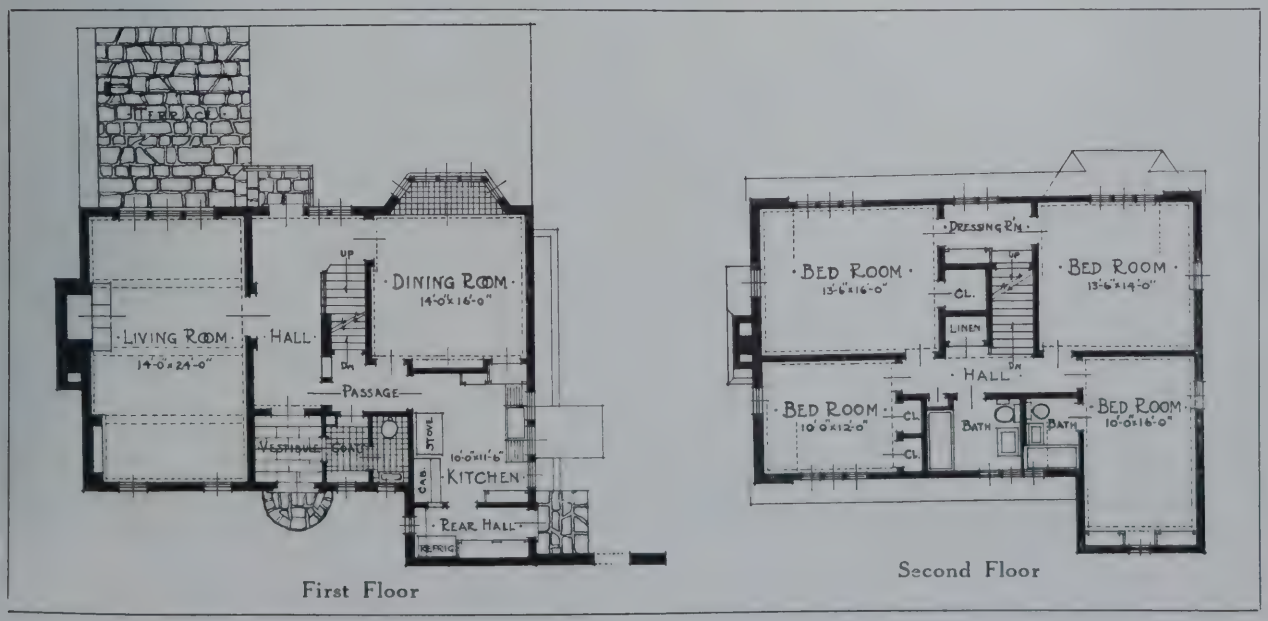
Main Entrance

House of James Cassidy, Forest Hills, N. Y.
Thomas C. Rogers, Architect

Photos, Paul J. Weber

HOUSE OF CHESTER LINDSAY CHURCHILL, ESQ., WABAN, MASS.
CHESTER LINDSAY CHURCHILL, ARCHITECT

IT is not always easy to classify the modern small house. To the average layman the use of stucco and half-timber connotes the English style. Mistakes are so often made that it seems far better to give up all attempts at deciding under which of several stylistic classifications a house may be placed. This example of a small house shows a rectangular design so treated that all feeling of formal rigidity is lacking. Low continuous dormers break the roof lines on both front and garden elevations. This type of continuous dormer provides excellent headroom in the second story, and at the same time does not detract from the cottage quality in the design. The length of the entrance front is broken by a tall, thin gable wing in which are located part of the kitchen and the service hall. A stucco-covered wall, which extends out from this bay, conceals and encloses the service entrance, and assists somewhat in prolonging



FORUM SPECIFICATION AND DATA SHEET—208

House of Chester Lindsay Churchill, Esq., Waban, Mass., Chester Lindsay Churchill, Architect

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Wood frame.

EXTERIOR MATERIALS:
Plaster, cypress and oak finish; brick chimney.

ROOF:
Graduated slates of varying tones.

WINDOWS:
Double-hung, triple-hung, and casements, wood.

FLOORS:
Oak; tile in service portion; marble in entrance vestibule; slate in toilet.

HEATING:
Vapor system.

PLUMBING:
Brass piping; automatic gas hot water system.

ELECTRICAL EQUIPMENT:
Wiring; specially designed wrought iron fixtures in main part of house.

INTERIOR MILLWORK:
Oak, with Italian ceiling in living room, and paneled chestnut doors in main part of house.

INTERIOR WALL FINISH:
Walls stained in warm ochres and waxed.

INTERIOR DECORATIVE TREATMENT:
Plaster walls; wood paneled doors, wood trim, paneled ceiling in living room.

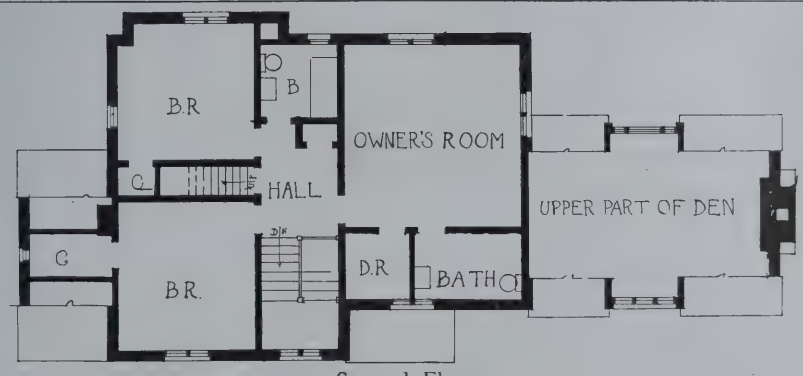
APPROXIMATE CUBIC FOOTAGE:
28,500.

the horizontal lines of the design. On the rear or garden elevation a long window extending to the floor at the south end of the living room and a spacious dining room bay window serve to prevent any monotony of the design. Although the eaves are kept rather high, the overhang is such that deep and pleasing shadows are cast over the stucco walls below. The compact and comfortable plan is characteristic of the work of a well trained architect. One of the interesting features of this plan is the arrangement of the coat room and lavatory, which open off the entrance vestibule. Although there is no pantry between the dining room and kitchen, the connection is through a passageway, thus preventing odors from reaching the dining room. The plan of the second floor is equally compact and well arranged. Two large bedrooms, two small bedrooms and two baths make up the layout of this floor. A dressing room connects the two larger bedrooms, out of which an enclosed stairway connects with the attic. Notwithstanding its simplicity, the house has a very cheerful, homelike quality, too seldom found.

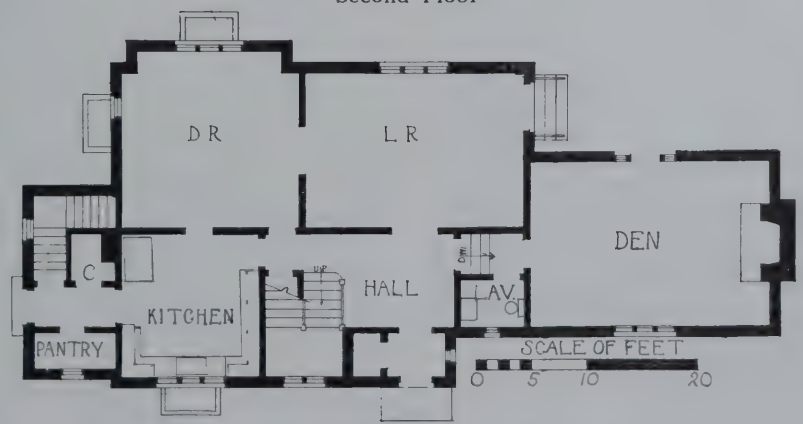
Garden Front, House of Chester Lindsay Churchill, Esq., Waban, Mass.
Chester Lindsay Churchill, Architect

Photos. Richard Southall Grant

HOUSE OF CLARENCE H. MICHAEL, ESQ., UTICA, N. Y.
KINNE & FRANK, ARCHITECTS



Second Floor



First Floor

FORUM SPECIFICATION AND DATA SHEET—209

House of Clarence H. Michael, Esq., Utica, N. Y.

Kinne & Frank, Architects

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Brick veneer and stucco.

EXTERIOR MATERIALS:
Stucco, stone masonry and half-timber.

ROOF:
Purple and green slates.

WINDOWS:
Steel sash and casements.

FLOORS:
Oak.

HEATING:
Vacuum steam.

INTERIOR MILLWORK:
Oak, English design.

INTERIOR WALL FINISH:
Rough plaster.

INTERIOR DECORATIVE TREATMENT:
Painted and glazed.

APPROXIMATE CUBIC FOOTAGE:
50,000.

COST PER CUBIC FOOT:
About 50 cents.

DATE OF COMPLETION:
Spring of 1927.

AMONG the several examples of small houses designed in the English style which are shown in the Small Buildings Section, this in Utica has points of interest. The general proportions of the building as well as the roof lines are good. The stone wall adds interest to the design as a whole, and is well tied in to the front elevation. The manner in which stone and brick are used indicates an obvious attempt at the picturesque. It is presumed that this treatment is intended to produce an artistic effect, but the result does not seem to justify the amount of care and trouble involved. The first floor has a good sized living room and dining room and a kitchen and service entrance on the front of the house. The omission in as large a house as this of a pantry is perhaps unusual. At the right of the entrance hall steps lead down through an entryway to another large room open to the rafters. The stone chimney breast and rough plaster of this room give a note of informality, but that there is no fireplace in either the living room or dining room seems unfortunate. On the second floor there are three large bedrooms and two baths. The plan of this house is suited to the requirements of a small family.

Main Entrance

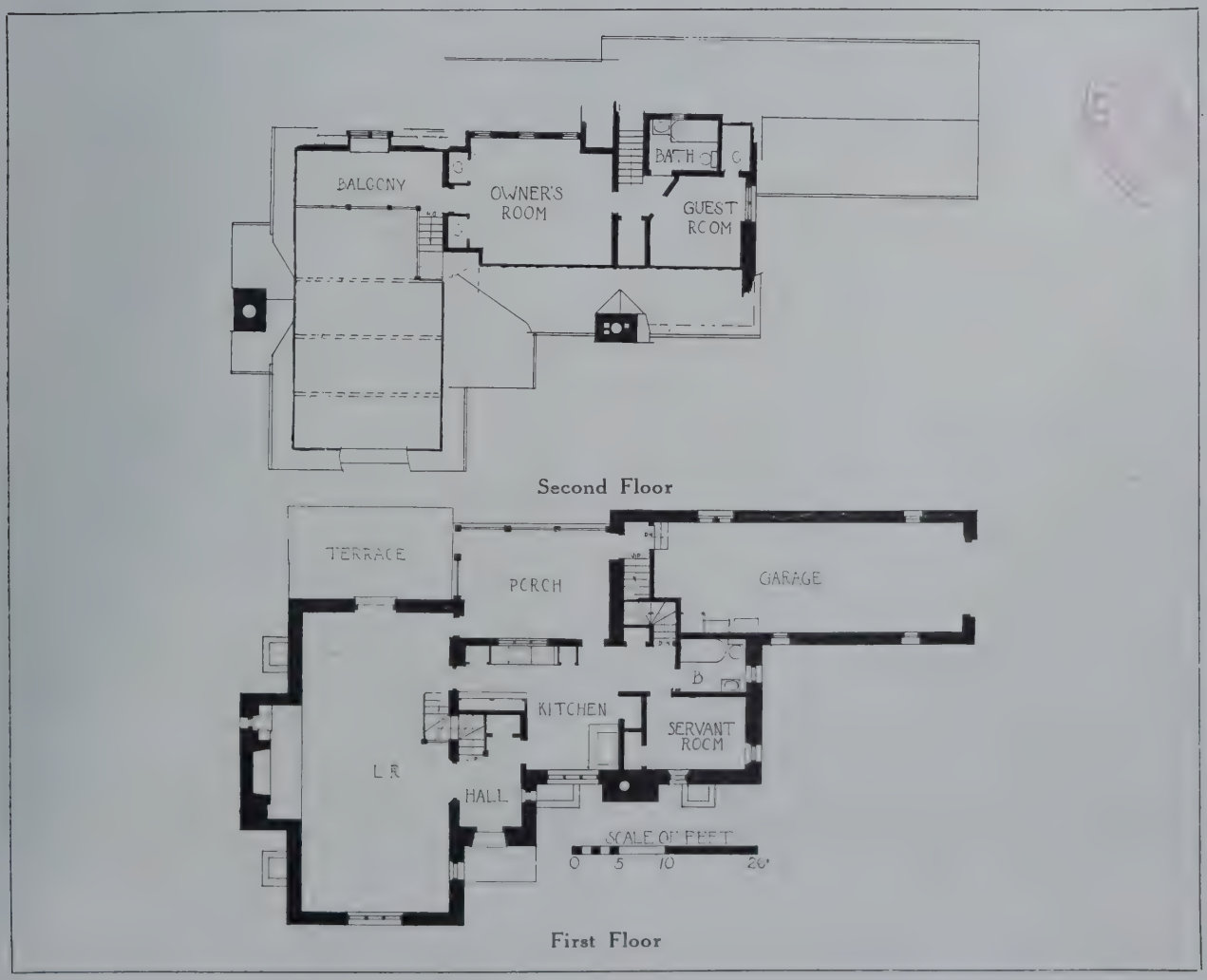
An Interior Detail

House of Clarence H. Michael, Esq., Utica, N. Y.

Kinne & Frank, Architects

Photos, H. D. Barlow

HOUSE OF JOHN R. HUMMA, ESQ., SADDLE RIVER, N. J.
PETER A. TIAGWAD, ARCHITECT



FORUM SPECIFICATION AND DATA SHEET—210

House of John R. Humma, Esq., Saddle River, N. J.

Peter A. Tiagwad, Architect

OUTLINE SPECIFICATIONS

EXTERIOR MATERIALS:
Local fieldstone.

ROOF:
Shingles.

WINDOWS:
Steel casements.

FLOORS:
Double; finish floor of oak stained dark. Kitchen and bath laid with cork.

HEATING:
Boiler and radiators; all pipes insulated.

PLUMBING:
Brass piping and standard fixtures.

ELECTRICAL EQUIPMENT:
Water pump; washing machine; refrigeration.

INTERIOR MILLWORK:
Oak throughout, especially detailed.

INTERIOR WALL FINISH:
Lumpy sand finish, rubbed down.

INTERIOR DECORATIVE TREATMENT:
Kitchen painted; bedrooms lacquered.

APPROXIMATE CUBIC FOOTAGE:
36,164.

COST PER CUBIC FOOT:
57 cents.

DATE OF COMPLETION:
December, 1926.

FIELDSTONE, laid up to a fairly flat surface, has been combined with half-timber and stucco in this small country house. The character of the stonework gives a rough texture to the wall surface which contrasts well with the dark stained trim and stained shingle roof. The house is long and low in character, spreading out over the site in picturesque fashion. A large living room, which occupies the entire wing of the house, is open to the rafters. The main stairway, which starts in the entrance hall, breaks through the wall of this living room, making an architectural feature across one side and forming a wide balcony across one end. From this balcony the principal bedroom of the house is reached, and beyond is a small guest room with a bath. These rooms are also reached by a small stairway leading down to the garage. The kitchen, which occupies the center of the first floor, is much larger than is usually found in a small country house. Part of this kitchen extends through to the living room, where a door under the stairway makes it possible to use one end of the living room for dining purposes. Back of the kitchen and connecting with both the living room and living terrace is a large covered porch where meals may be served in warm weather. Beyond the kitchen are a servant's bedroom and bath and a garage of unusual shape. Although wide enough for only one car, the depth is so great that two cars may be accommodated, one behind the other. From the architectural point of view this long, narrow garage has a distinct picturesque value. From the entryway which connects the garage with the covered living porch, a stairway leads up to the floor above. This arrangement is convenient, as it makes it possible for the owner of the house to reach his room on the second floor after housing his car without going through the main part of the house. On the whole, the plan is quite amusing, although as will be readily seen, it is distinctly adapted to a family without children.

Entrance

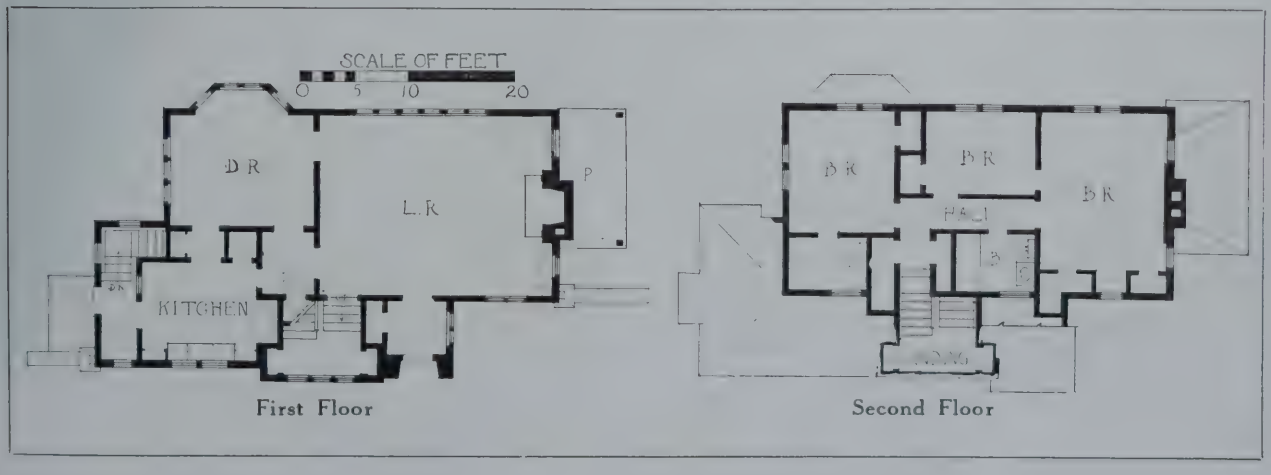
Porch

House of John R. Humma, Esq., Saddle River, N. J.
Peter A. Tiagwad, Architect

Photos. George H. Van Anda

HOUSE OF GUY ROBINSON, ESQ., DOUGLAS MANOR, N. Y.
ALFRED A. SCHEFFER, ARCHITECT

A PROJECTING entrance porch and stair bay relieve the rectangularity of the front elevation. The continuation of the roof slope over the entrance vestibule is a good architectural feature, composing well with the gable roof over the stairway. It is a little unfortunate that a sunken window had to be placed in the roof above the entrance porch. This is one of those cases where the interior arrangement of a house seriously affects the exterior design. The roof of this house is so attractive that no windows should have been cut into it. No alternative, however, seems possible, unless the walls of the house had been high enough to include a second story window below the overhang of the roof. Dormers, of course, might have been used, but even they would have broken the fine roof lines. The stucco is excellent in texture and combines well with the rough-hewn half-timber work. The diamond-



First Floor Second Floor

FORUM SPECIFICATION AND DATA SHEET—211

House of Guy Robinson, Esq., Douglas Manor, N. Y.

Alfred A. Scheffer, Architect

OUTLINE SPECIFICATIONS

EXTERIOR MATERIALS:
Stucco; half-timber.

ROOF:
Rough slates.

WINDOWS:
Wood casements.

FLOORS:
Oak.

HEATING:
Steam.

INTERIOR MILLWORK:
Plain.

INTERIOR WALL TREATMENT:
Walls papered; sand-finished in portions.

APPROXIMATE CUBIC FOOTAGE:
26,708.

COST PER CUBIC FOOT:
53 cents.

YEAR OF COMPLETION:
1923.

shaped panes in the window of the entrance vestibule are so appropriate to this type of house that one might wish that all of the windows had been casements of this type. Nothing gives more scale or character to a small English house than leaded casements in either diamond or rectangular panes. The plans show thought and careful study. The living room is spacious, and the dining room of ample size. Both of these rooms open into a foyer or small square hall which connects with the kitchen.

Entrance Detail

Service Wing

House of Guy Robinson, Esq., Douglas Manor, N. Y.

Alfred A. Scheffer, Architect

Photos. Amemiya

HOUSE OF EDWARD T. CHILDS, ESQ., LARCHMONT, N. Y.
AYMAR EMBURY II, ARCHITECT

FORUM SPECIFICATION AND DATA SHEET—212

OUTLINE SPECIFICATIONS

GENERAL TYPE OF CONSTRUCTION:
Frame.

EXTERIOR MATERIALS:
Stucco.

ROOF:
Slate.

WINDOWS:
Wood.

FLOORS:
Wood stained.

HEATING:
Steam.

INTERIOR WALL FINISH:
Painted.

INTERIOR DECORATIVE TREATMENT:
Paint.

Garage

Porch

Carden Front, House of Edward T. Childs, Esq., Larchmont, N. Y.

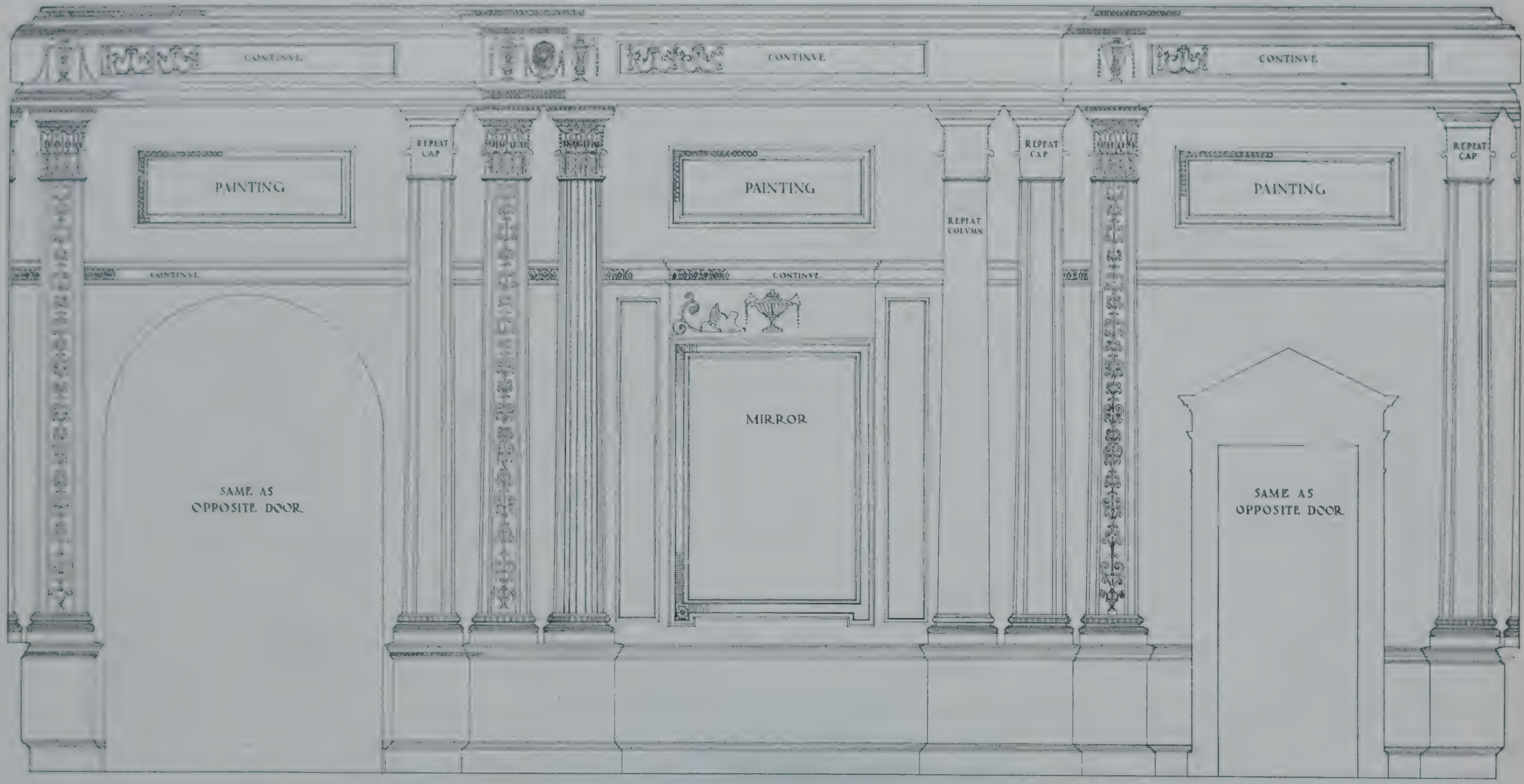
Aymar Embury II, Architect

INTERIOR ARCHITECTURE

Boodle's Club, London

BOODLE'S CLUB, built by Robert Adam in 1775, is among the earlier of the palatial clubs for which London has achieved an enviable renown. Both in external symmetry and internal comfort, it represents the spirit of the dignified and prosperous set which constitutes its membership, in that it is a quiet and dignified building. The fact that it was designed in that period when Georgian architecture had passed the experimental stage and settled down to aristocratic conservatism accounts for its excellence. The club reaches the height of its architectural perfection in the salon on the second floor. Here we find Adam at his best in the well designed proportions and fineness of detail. At one end of the room is the Palladian window, better known from the exterior, but equally as well done on the interior. Other details fully as interesting are the marble mantel and the ornament on doors, pilasters, and ceiling.

Wall and Mantel, Boodle's Club, London



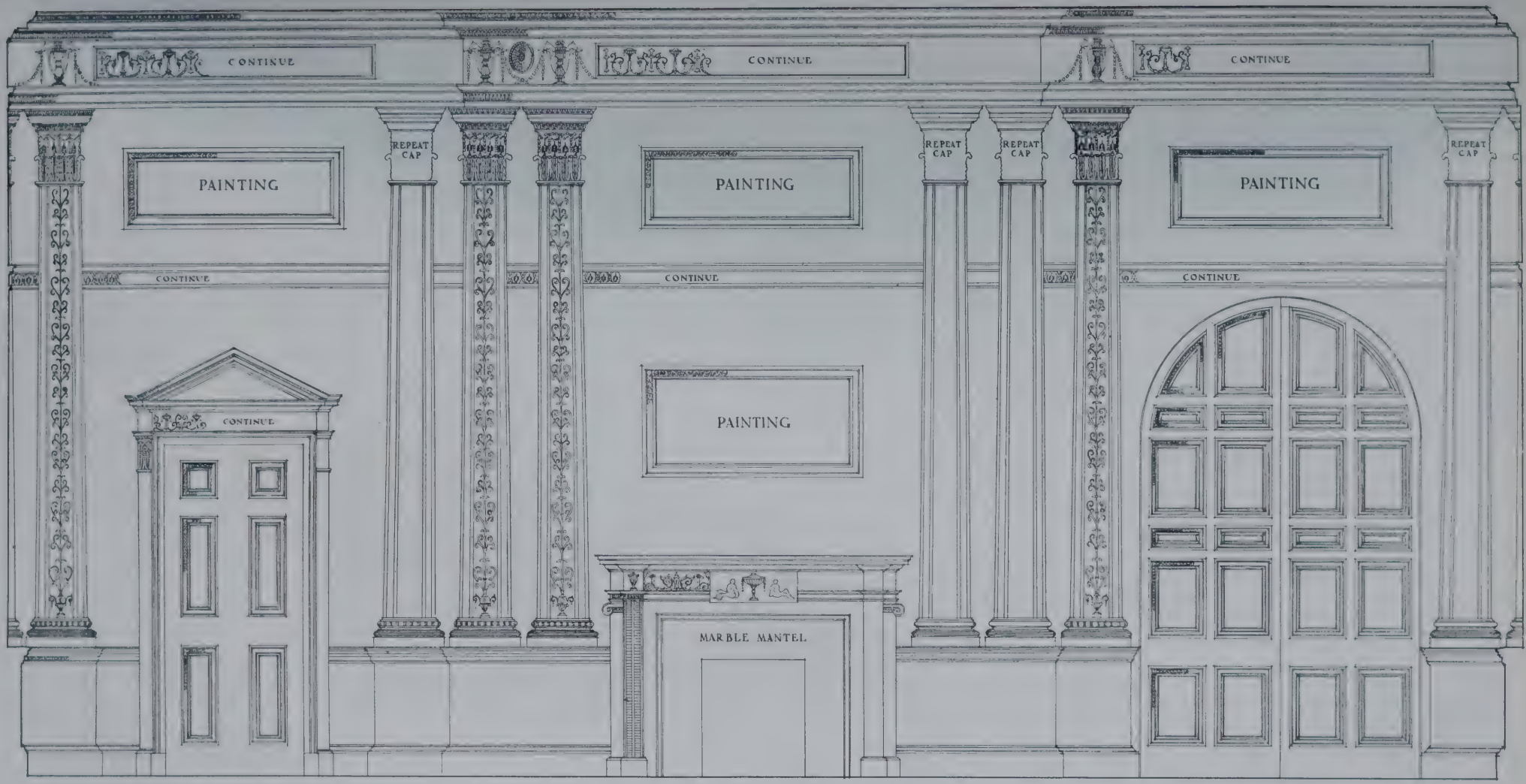
NORTH WALL IN SALON

BOODLE'S CLUB

LONDON

SCALE.

0 1 2 3 4 FT.



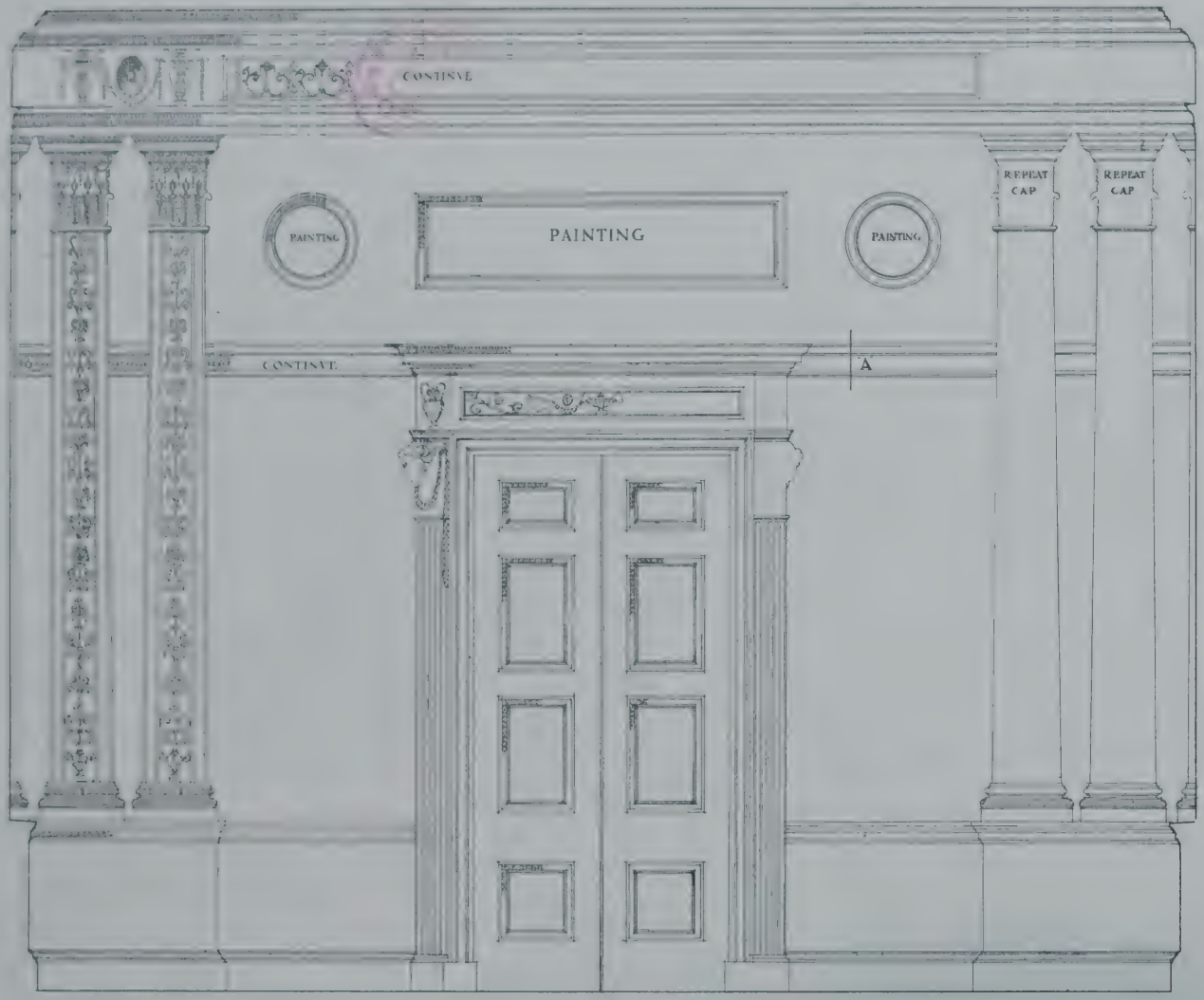
SOVTH WALL IN SALON

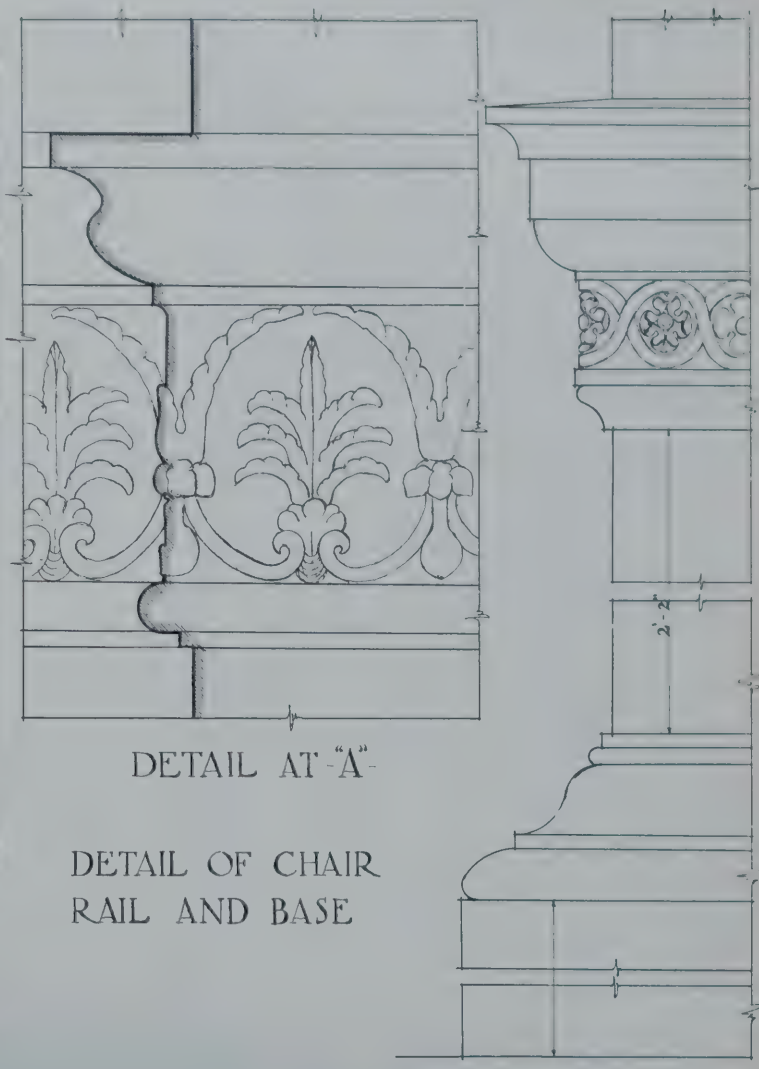
BOODLE'S CLVB

LONDON

SCALE

0 1 2 3 4 FT.





DETAIL AT "A"

DETAIL OF CHAIR RAIL AND BASE

EAST WALL IN SALON

BOODLE'S CLUB

LONDON

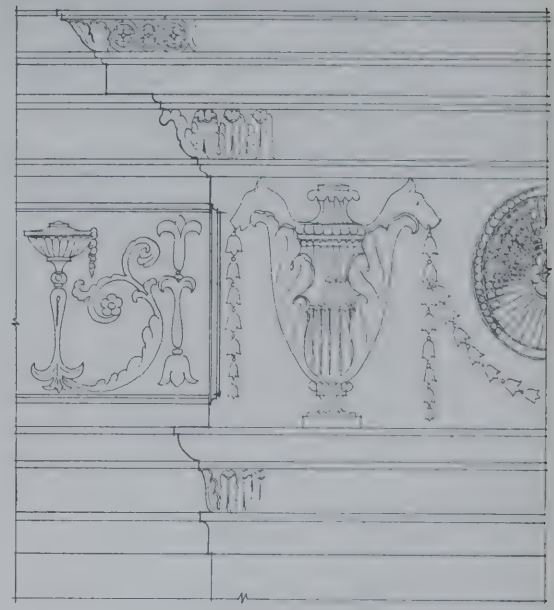
SCALE OF ELEVATION
0 1 2 3 4 FT.

SCALE OF DETAILS
0 1 2 3 4 IN.

SECTION AT-"A"

SECTION AT-"B"

SCALE
0 1 2 3 4 IN



DETAIL OF CORNICE

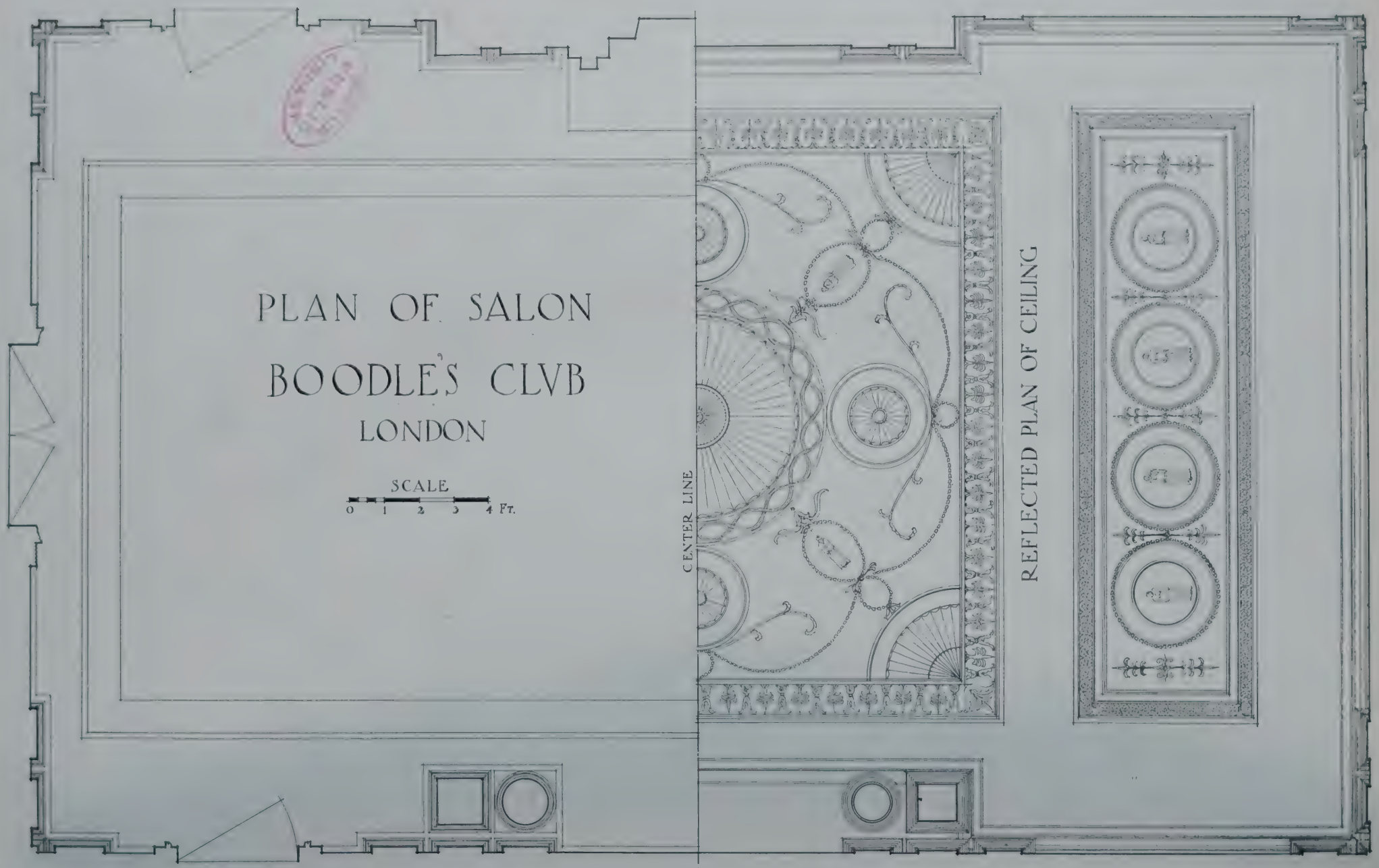
SCALE
0 4 8 IN.

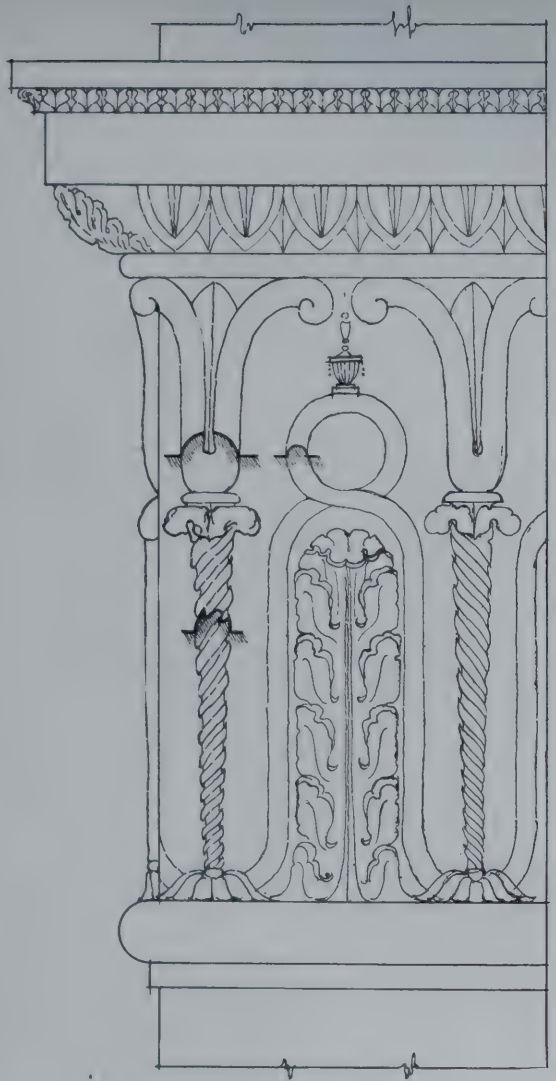
SECTION E-E

SCALE OF ELEVATION
1 2 3 4 FT.

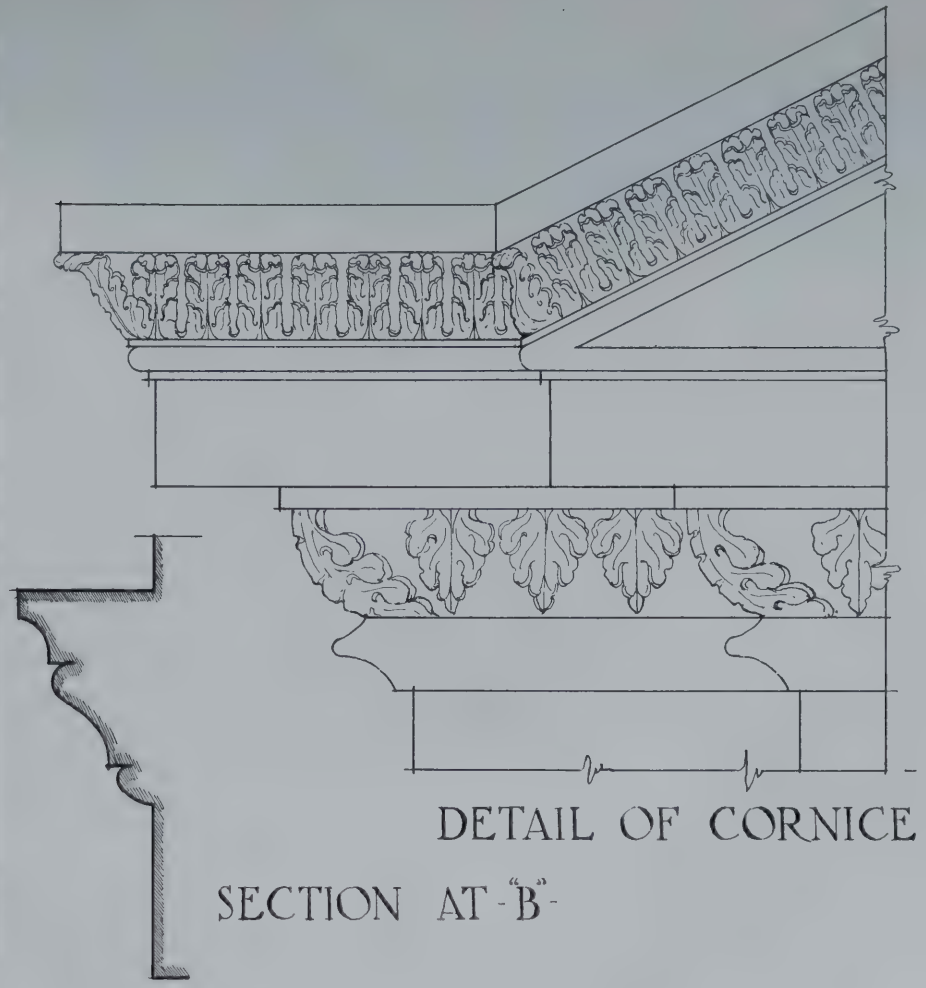
WEST WALL IN SALON
BOODLE'S CLUB
LONDON

BOSTON PUBLIC LIBRARY


PLAN OF SALON
BOODLE'S CLUB
LONDON
SCALE
0 1 2 3 4 FT.
CENTER LINE
REFLECTED PLAN OF CEILING



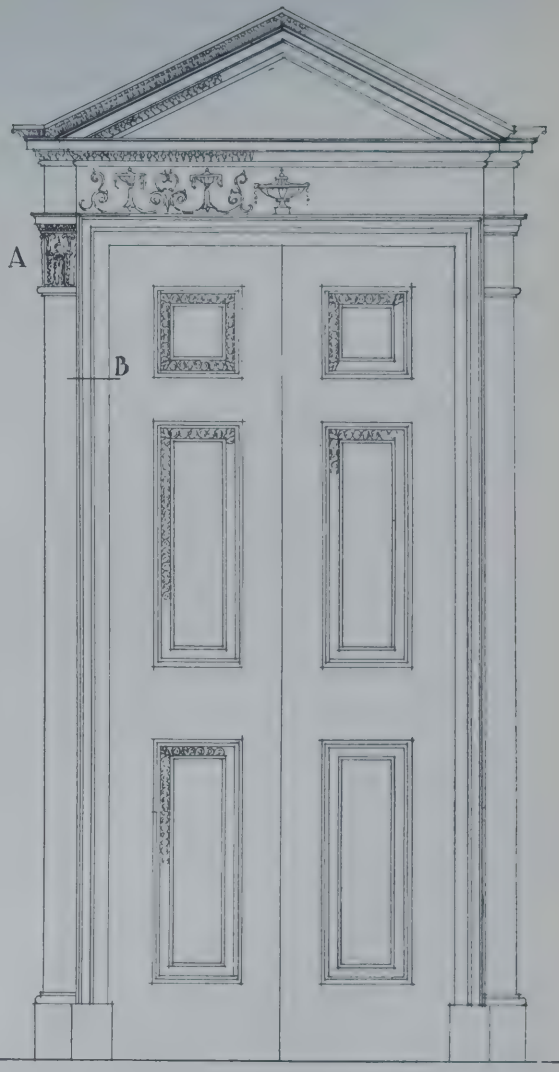
DETAIL AT -"A"-



DETAIL OF CORNICE

SECTION AT -"B"-

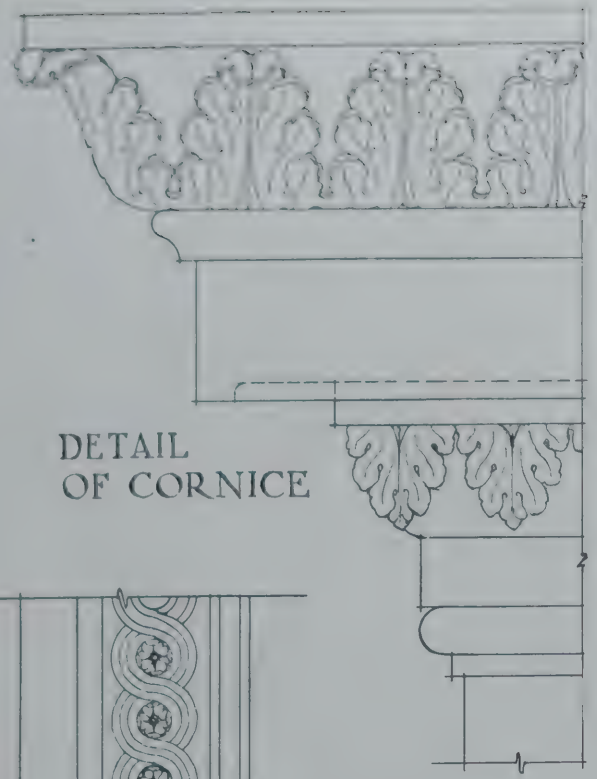
DOOR IN SALON
BOODLE'S CLUB
LONDON



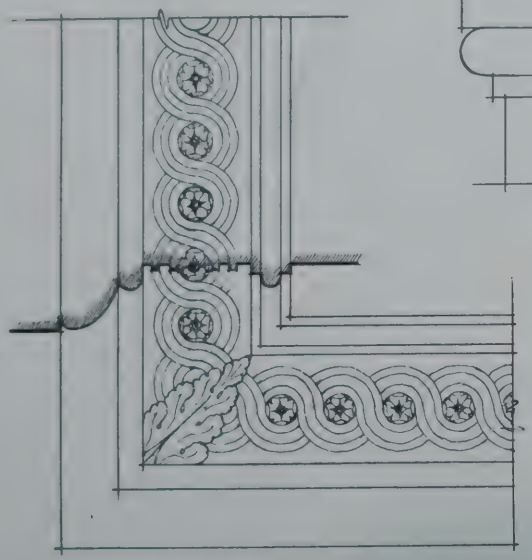
ELEVATION

SCALE OF DETAILS
0 1 2 3 4 IN

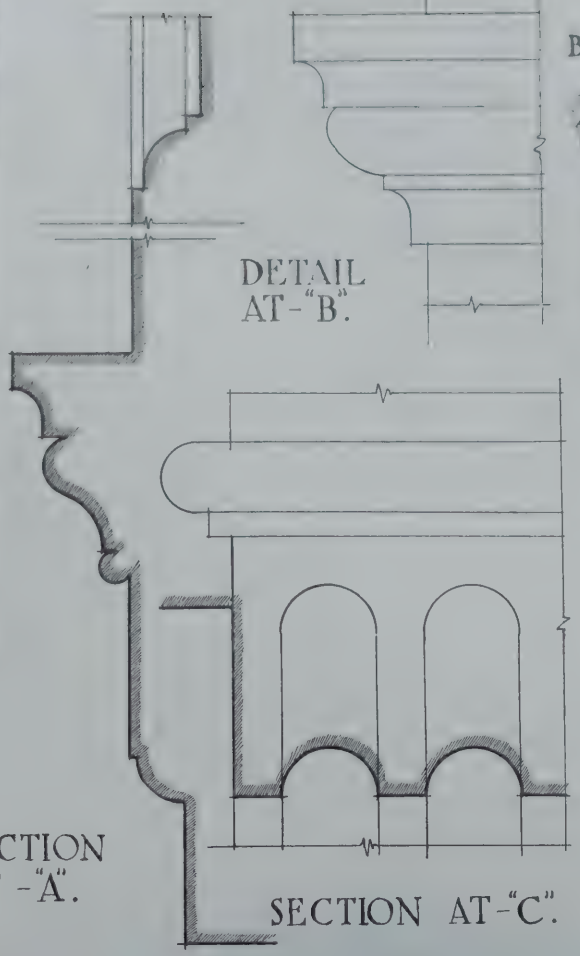
SCALE
0 1 2 3 4 FT.



DETAIL OF CORNICE



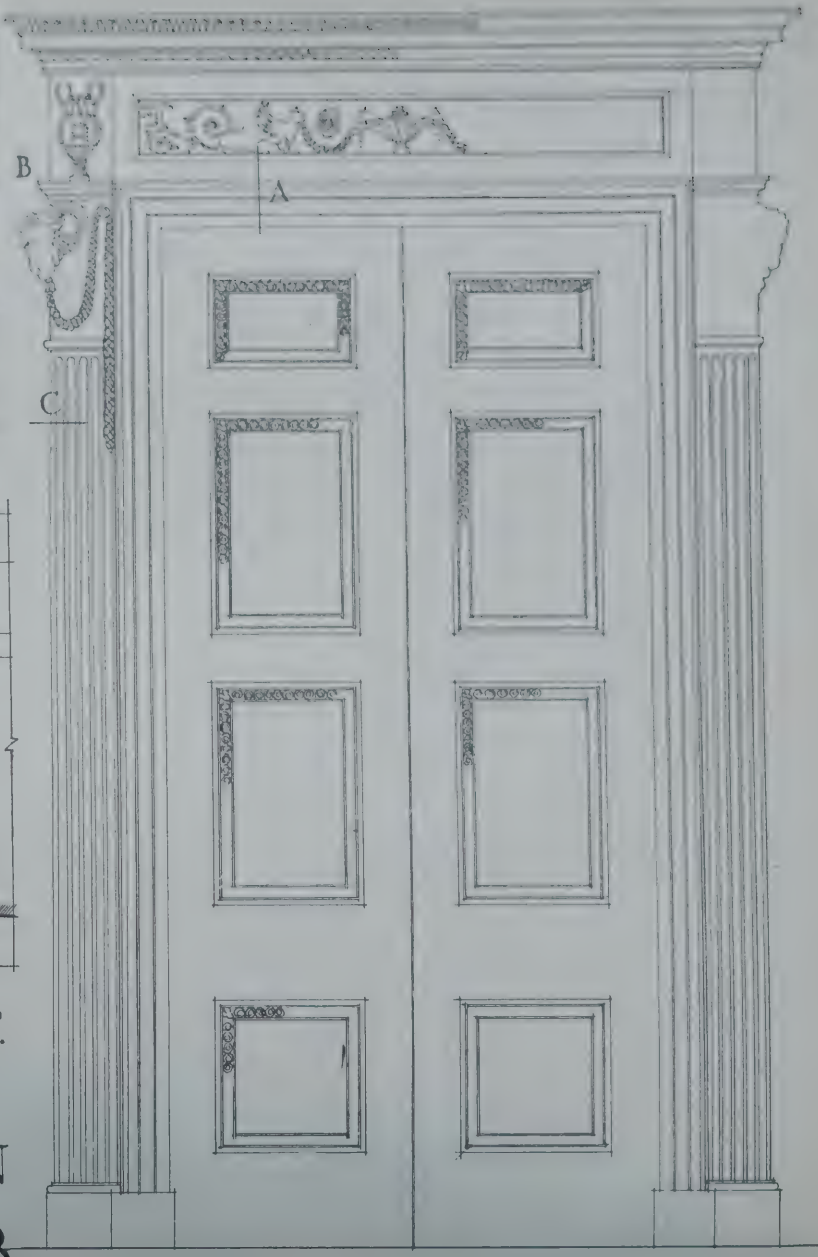
DETAIL OF PANEL



SECTION AT -"A".

SECTION AT -"C".

DETAIL AT -"B".



DOOR AT END OF SALON

BOODLE'S CLUB

LONDON

ELEVATION

SCALE OF DETAILS

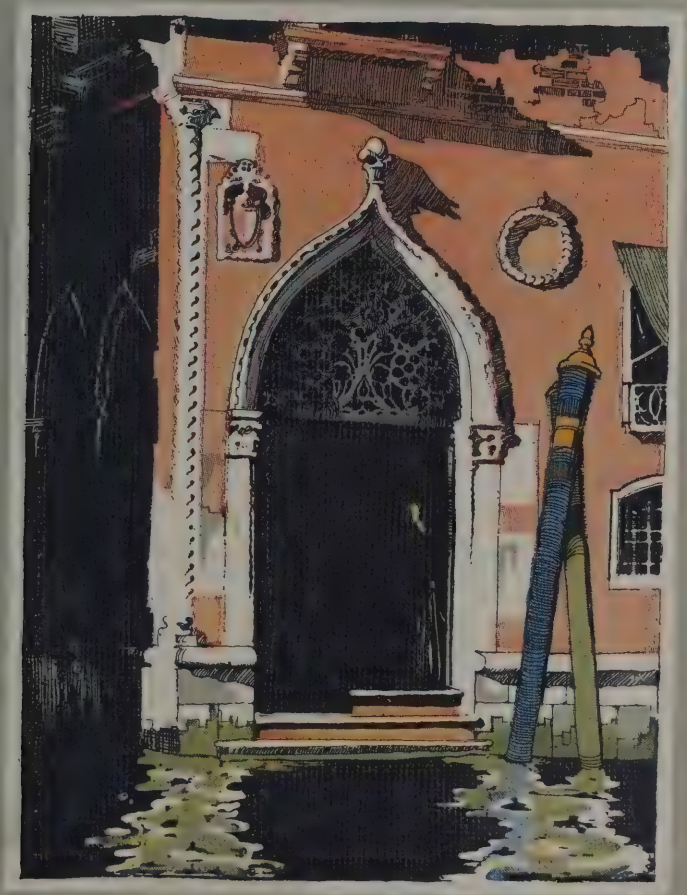
0 1 2 3 4

SCALE

0 1 2 3 4 FT.

F.A.

THE ARCHITECTURAL FORUM



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BOOK DEPARTMENT

Minor Buildings of Brittany and Normandy

A Review of Provincial French Types

As the author points out in his introduction, "the smaller buildings and particularly the smaller examples of domestic architecture of any district have a fascination due not alone to the fact that they are particular witnesses to the life of the times in which they were built, but even more to the fact that they have an intimate appeal to a great majority of people. The larger and more monumental work will be admired, but when the smaller and more picturesque work is at hand an intimate relation arises immediately, together with a certain desire to possess something similar. There are few persons, regardless of how formal may be their general mode of living, but have a latent desire for at least a period of simple informality, while for the vast majority, circumstances of one kind or another have imposed upon them more or less simplicity of living."

If Mr. Foster needed any convincing excuse for the publication of his book, that excuse could be found in his own words just quoted. As a matter of fact, he needs no excuse, and the existence of the volume is fully justified by the excellence and variety of the material it contains. Any book, indeed, is more than welcome if it tends to the betterment of small house design, whether the scope of such design be rural, suburban, or for the closer limits of the city. Despite all that has been accomplished in this direction,—and much substantial progress has been made within the past few years,—a more general consciousness of opportunity and a keener sense of responsibility need still to be aroused in order to lessen the number of small house atrocities that continue to be perpetrated on every hand. From sheer force of numbers, the small house is bound to give the prevailing architectural tone to any given part of the country. It is vitally important, therefore, that the character of the small house should be a subject of concern, not to architects alone but also to the general lay public. Fortunately, Mr. Foster's volume, besides presenting abundant subject matter of immense suggestive value to the architect, is well calculated to excite both the interest and admiration of cultivated laymen with an intelligent outlook upon architectural affairs.

To design and execute creditably a house patterned in the picturesque, informal manner of any local traditional type,—whether French or British, Spanish or Italian,—is a far more difficult matter than it is to follow acceptably all the methods and peculiar niceties of some familiar and well established mode. It requires not only a broader knowledge of all manner of minutiæ but also a peculiarly sympathetic grasp of all the conditions out of which the type chosen as a working basis was evolved. Furthermore, it calls for a clear perception of the essentials underlying the desired picturesque quality; otherwise the result is likely to bear the stamp of affectation and prove a source of satisfaction only less ephemeral than a piece of stage setting. As Mr. Foster aptly observes, "a good picturesque design is difficult to achieve because of the very anomaly of the two words. 'Picturesque' rather precludes 'design.' It is more accidental, with various parts added by chance and because of definite requirements; it depends for its charm more on mass and texture and color than on symmetry and detail. To be sure, there is always a certain amount of balance, but it is that balance which comes as a natural result of the instinctive desire for order and repose rather than as the result of studied design,"— and particularly true of French architecture.

With the foregoing considerations ever in mind, a close study of the churches, cottages, town groups, manor houses and farmhouses illustrated in this volume cannot fail to be immensely profitable. Every drawing and half-tone will bear repeated scrutiny and analysis; each inspection will yield a fresh store of stimulating suggestion. The 84 plates contain over 130 half-tones and ten drawings by Mr. Rosenberg, presented in his customary fascinating and convincing manner. The subjects illustrated are all in Normandy and Brittany and display a striking diversity of types not easily to be paralleled elsewhere in France within a like territorial compass. As might be expected, Normandy holds the majority of these varied types. The whole region, as the author indicates, is peculiarly rich in domestic architecture instinct with sincerity and simple straightforwardness,—architecture that is purely ingenuous and not at all "on parade,"—but it is impossible to agree with his statement that Normandy contains but "few fine town houses and few real chateaux." The great chateaux of the Loire valley,—the chateau country, par excellence,—one does not expect to find multiplied over the face of the entire country, of course, but hidden away in secluded valleys are many chateaux that are veritable gems, and they can hold their own with anything in chateaudom, in quality if not in size. Much of the charm of Norman small domestic architecture depends upon the materials and the way they are used, the textures secured, and the colors shown in the ensemble. Mr. Foster's notes on materials, textures and colors, therefore, will prove an especially useful feature of the book and will materially aid the designer in catching the spirit which animates this particularly delightful and yet highly elusive type of domestic architecture.

COTTAGES, MANORS AND OTHER MINOR BUILDINGS OF NORMANDY AND BRITTANY. By William D. Foster, with Sketches by Louis C. Rosenberg. Text and 84 pp., of plates, 10½ x 13½ ins. Price $10.00 Net. The Architectural Book Publishing Co., 31 East 12th Street, New York.

GRADE SCHOOL BUILDINGS; BOOK II

IN no department of architecture have the last ten years seen quite the progress which has been made with schoolhouses, a class of buildings of the first importance, since they exert a strong influence upon their communities, and by their architectural excellence or the lack of excellence they elevate or lower the architectural standards of entire districts. Study of school structures, particularly at the hands of a group of well known architects, has resulted in their being given a high degree of architectural distinction and dignity in the way of design, while study directed toward their planning and equipment has led to their being practical and convenient far beyond what was regarded as an advanced standard of efficiency anywhere in America even a few years ago.

Kensington Schoolhouse, Great Neck, N. Y.
Wesley Sherwood Bessell, *Architect*

THIS volume, a companion to another published in 1914, records the results of endless study and experiment in different parts of the country, summed up and presented. By illustrations of exteriors and interiors, by floor plans and carefully written descriptions and articles by well known architects and educators, the present high standard of schoolhouse design is made plain, and these results which have been achieved by a few architects and school boards are thus made possible to all architects who are interested in schoolhouse design. The compiler has selected from almost 1000 exteriors and floor plans the school buildings to be illustrated, and the volume records "a process of innovation and elimination, namely, the introduction from time to time of features which have been deemed desirable and practical, and the elimination of things which, owing to changed school methods, are no longer required."

400 pages; 7¾ x 10½ inches
Profusely Illustrated; Price $10

ROGERS & MANSON COMPANY
383 MADISON AVENUE NEW YORK

THE PRACTICAL BOOK OF DECORATIVE WALL TREATMENTS. By Nancy McClelland. 273 pp. 8 illustrations in color; 211 in black and white, 8¾ x 6½ ins. Price $10. J. B. Lippincott Company, Washington Square, Philadelphia.

IN the modern revival of interest in the different arts, one of the most fascinating subjects is that which deals with decorative wall treatments, an art which has known its periods of inception and growth, dating back to the time of the Pharaohs, 4,000 or 5,000 years ago, until between the thirteenth and eighteenth centuries, wall treatments reached their highest development and were most important in aiding interior architectural expression. Research into the phases of interior wall decoration provides matter of interest and is of great importance to the modern world of architecture and decoration.

Among the various wall treatments which have been in use, wood paneling was greatly favored in England in Tudor and Stuart days, and became very popular here in America, as also was it the most important feature of Louis XV walls, usually made of oak or pine in curving panels, painted in delicate and vivacious colors. Mural painting, introduced to the modern world in the first half of the fifteenth century by such masters as Raphael, Veronese, Titian and Tintoretto, became architectonic in character. Mural paintings became huge pictures framed in architecture. The use of *simili-architecture* made its way into other countries. The first attempt at mural decoration in America came with the use of stenciled borders in simple designs followed by what are known as "American frescoes." These paintings were largely naïve landscapes with many trees, birds, flowers and picture subjects. Although the art of fresco painting began before the Christian era, its greatest development for decorative purposes commenced in Italy in the thirteenth century, Giotto being the most eminent fresco painter of this age, followed by Masaccio, Fra Filippo Lippi and Botticelli in the fifteenth century. Marbleizing, the art of veining or graining in imitation of marble on plaster, slate, wood, iron and glass, was another form of wall treatment which was used extensively in Italy during the fourteenth and fifteenth centuries. The great master, Raphael, made use of marbleizing in the Stanze of the Vatican, where cost was not a matter of much consideration. In Italy in the seventeenth century, when real marble could not be procured or afforded, dadoes, cornices, pilasters, and other architectural features of wood and stucco were marbleized in a fashion to deceive the most critical eye. Much architecture was painted illusion, instead of being actual construction. Wherever there were great plaster wall spaces not covered with frescoes, figures or landscapes, painted architecture became common, especially in Tuscany, and so perfectly were these architectural schemes carried out that they seemed actually in relief. Cornices, pilasters, niches with figures and pediments over doors, were done in light and shadow in the most convincing and reassuring manner.

In this volume Miss McClelland has handled with the utmost deftness a fascinating subject, and far from being technical for the layman, it is, nevertheless, invaluable to the technician. The author has given us many elaborate schemes of decorative wall treatments, among which will be found certain elements capable of being transplanted into our own dwellings. Among these, use of tiles for wall decoration is perhaps the oldest, adopted from the Orient in the fifteenth century by Spain and

A reproduction of this rendering by Hugh Ferriss, suitable for framing, will be mailed free of cost to any architect

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Bertram Grosvenor Goodhue

Architect and Master of Many Arts

PERHAPS no architect who ever lived in America built up more of a personal following than Bertram G. Goodhue. His was one of the two or three names which came instantly to mind when Gothic ecclesiastical architecture was mentioned, and his churches, many and prominent, have exerted their influence upon ecclesiastical architecture all over the world. But Mr. Goodhue was equally talented in other and quite different ways. He well knew how to handle architecture of entirely other kinds, and his drawings, book plates, illustrations and type faces were of such note that they all but compete with his work as an architect of Gothic churches.

THIS volume constitutes a record or review of Mr. Goodhue's achievements in many fields. Those who collaborated or worked with him have contributed to its text, and its illustrations set forth the excellence of his work in all the arts of which he was an acknowledged master. It is a magnificent and authoritative work, issued by the Press of the American Institute of Architects.

Text and 273 Plates, 11 x 14 inches
Price, $30

ROGERS & MANSON COMPANY
383 MADISON AVENUE NEW YORK

Holland, countries which have made the most lavish use of tiles, and it is to these two countries that we owe many beautiful tile designs and practical suggestions for their employment. Both England and America favored use of the famous Delft tiles, which were made in Holland from the commencement of the seventeenth century, and which were generally white decorated with blue and yellow. Among the many illustrations in this volume may be seen one of an interesting arrangement of old Persian tiles; the skillful employment of the patterned wall surface and its combination with other materials is especially notable. The art of making decorated leather began with the Arabs or Moors, dating from the thirteenth century. Cordova in Spain was the seat of this industry in the fifteenth and sixteenth centuries, and so famous did the Spanish industry become that leather hangings are even today generally known as "Cordovanes."

Today, many signs point to the revival of the decorative idea. There is a live and healthy interest in architectural features, such as wood paneling. Mural painters are perhaps more busily occupied than they have been for years, and those who furnish us with wallpaper have been among the first to feel the stimulating reaction against monotone backgrounds that now prevails. Since wall paper was developed in the fifteenth century, there have not been so many fine designs as there are today, beginning with the handsome scenic papers, that combine vigor of color with fine motifs in panoramic variety, and ending with those showing minute dots and flower petals. Many wall papers which depict historical events do not cover the entire surface of the wall, but are used very effectively in panels, as may be seen in certain rooms at Fontainebleau. Scenic papers are delightfully called "story papers" in France because each is a variegated theme, either of some landscape or of some familiar fable.

Miss McClelland considers not only the various forms of fixed wall decoration that may be employed to give beauty to a room, but devotes an entire chapter to the many forms of movable wall decorations which include pictures, mirrors, wall lights and wall clocks, hanging shelves, carvings and textiles, whose functions are quite as important in their way as are the built-in decorations. Scale, balance and suitability are taken into consideration as well as color schemes. This volume is unusually well illustrated with interiors abroad as well as in America.

EARLY AMERICAN FURNITURE. By Charles O. Cornelius. 278 pp., 5½ x 8 ins. Price $4. The Century Co., New York.

STUDY of the origins and development of interior architecture, decoration and furnishing in early American days received a decided impetus with the opening of the Early American Wing at the Metropolitan Museum. For the first time there was presented upon an adequate scale the development of the American interior, rooms being arranged in the ways which prevailed in different localities at different times; in most instances, in fact, actual interiors are used, and the furnishings are authentic pieces of the different periods. The guide to the Early American Wing, published by the Museum is helpful and complete, but something more than a guide book has been required for complete study of the Wing and its treasures. An excellent and concise history of early American furniture correlated to the contents of the Early American Wing is what this work is in effect, the numerous illustrations being largely from that source.

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TREES IN WINTER; THEIR STUDY, PLANTING, CARE, AND IDENTIFICATION. By Albert Francis Blakeslee and Chester Deacon Jarvis. 446 pp., 5½ x 8½ ins. Price $2.50. The Macmillan Company, New York.

ONE of several subjects related more or less closely to architecture which is just at present receiving considerable attention is concerned with the selection, planting and care of trees. Particularly in rural places the presence or the lack of suitable trees goes far toward either making or marring the effect of buildings which are in themselves good, and since streets in cities and towns are ordinarily planted with trees, the subject has its application to localities urban as well as to districts rural. And yet it is really amazing to see the stupidity with which the matter of tree culture is approached. In New York one frequently sees young trees struggling for existence in places where they are surrounded by large areas of asphalt or granitoid pavements, where for them to secure moisture and air for their roots is absolutely out of the question, or else planted in places where, since a subway is but a foot of two below the surface, growth or even long continued life is quite impossible; and even in New York's parks there seems to be utter indifference, or else complete ignorance, of the importance of cutting away from trees the dead wood which comes with neglect and which should be removed.

This work is a helpful survey or review of the entire subject of trees and their care. In addition to discussing the choice of the best varieties of trees for certain uses, it deals with their planting and care, the curing of their diseases, the extermination of moths or insects which threaten their lives and often kill them, the removal of fungi, and their proper treatment when they are so injured by wind, ice, or snow that limbs must be amputated and wounds healed. It may well engage the attention of architects and engineers as well as of the landscape architects, to whom it is presumably primarily addressed.

THE ANALYSIS OF ART. By De Witt H. Parker. 190 pp., 6 x 9 ins. Price $4. Yale University Press, New Haven.

THE wide gulf fixed between public understanding and real appreciation of art in its various forms is largely the result of misunderstanding of just what art is and what it means. Our museums are thronged by people who are drawn thither not by curiosity but by a genuine yearning for a closer knowledge of art in its various forms, and the lectures and informal talks which thoughtful museum officials provide supply for many the interpretation of what the visitors see and unlock the door which for most people is shut between art and understanding. For many, however, if this door is to be opened at all it must be not so much by the aid of the spoken word as by that of the printed page, and this is what has been done by Professor Parker, of the Department of Philosophy in the University of Michigan, in a volume made up, as the preface points out, of material used in lectures given at the Metropolitan Museum during January, 1926. The work does not attempt to offer a complete survey of the large field of æsthetics, but rather to afford study of some of the basic problems of the philosophy of art, and to focus interest and attention.

PROVINCIAL HOUSES IN SPAIN

By Arthur Byne & Mildred Stapley

ARCHITECTS value Spanish types of domestic architecture because of their simplicity of design and plan and also because they are easily developed in materials inexpensive and easily had. Spain offers a choice of several kinds of residence architecture, types sufficiently different from one another to afford considerable range of selection, yet all possessing the same strength and virility, the excellent lines, the same graceful but unaffected grouping, and the discriminating use of detail which renders distinguished so many Spanish domestic buildings.

Houses in various parts of the Spanish peninsula, particularly the buildings of medium size in rural districts or provincial towns, offer excellent precedent for use in different parts of America where climate conditions are about what prevail in the provinces of Spain.

IN this volume two well known writers on Spanish architecture and decoration review the various forms which are given to the small or medium sized house in Spain. To render the work as helpful as possible to architects, the authors have included many plans and drawings of different kinds, details of such exterior parts of buildings as friezes, cornices, windows, timber overhangs, soffits and balconies, or of such interior parts of the structure as ceilings, fireplaces, doors and stairways. Part of the work deals with the tiles, pottery, ironwork, plaster in relief and the other forms of craftsmanship which contribute so much to the excellence of domestic architecture in Spain. It is a work likely to be invaluable to the designer.

The book contains text and 190 plates 12½x16 inches, and is bound in cloth. Price $25, postpaid.

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The ARCHITECTURAL FORUM

VOLUME XLVII — *Established 1892* — NUMBER 6

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THE EDITOR'S FORUM

EXCAVATIONS IN ATHENS

DURING October a number of New York newspapers made announcement of an undertaking of considerable interest and importance to American archæologists. Thus *The New York Times*: "Acting on behalf of an anonymous American philanthropist, Colonel Arthur Woods, former Police Commissioner of New York, has, it was learned recently, furnished funds to the American School for Classical Studies at Athens to begin in the heart of classic Athens the most ambitious and costly archæological enterprise ever undertaken.

"The American School for Archæological Studies at Athens has obtained from the Greek government concessions, which are now under examination by lawyers in this city, granting the right to dig up the 25-acre site of the Agora, or market place, which was in ancient times covered with temples, libraries and other public edifices and full of artistic treasures described by classic writers. Great buildings were erected there by Greek and non-Greek rulers, from Pericles to Hadrian. The project to dig this most promising of all sites of antiquity has been agitated for a century and is now for the first time nearing realization. Professor Edward Capps of Princeton University, who conducted the negotiations with the Greek government which resulted in the concessions, has been planning to raise $2,500,000 to carry out the project, in a 20-year period or longer, by calling for financial help from all the great universities of the country and from previous liberal supporters of American archæological work in Greece, including John D. Rockefeller, Jr., J. P. Morgan, Thomas L. Chadbourne, the Carnegie Corporation, and others."

A FOURTH ANNUAL SALON

AT the Marshall Field Picture Galleries, Chicago, there will be held from January 28 to February 15, 1928 the fourth annual exhibition sponsored by the "Hoosier Salon." The exhibition will be open to the work of "any artist born in Indiana, any artist who has lived in Indiana for a period of five years or more, or who is identified with a group of Indiana artists and who returns to that state for periodical sketching trips." A number of cash prizes have been offered, and the Indiana Limestone Company offers a prize of $200 for "the best piece of carved limestone which shows creative design and which can be embodied in an architectural design either exterior or interior." The Executive Secretary, in charge of the arrangement of the exhibition, to whom application for entries should be made, is Mrs. C. B. King, 113 North Homan Boulevard, Chicago.

GERMAN BRICKWORK

EARLY in November there was opened in New York an exhibition of photographs illustrating the skillful use of brick which has long been made in Germany. The photographs are of brickwork of both the mediæval and the modern periods, and give an excellent idea of the possibilities inherent in a material which has done so much to render German architecture interesting and distinguished. Later on these photographs, which form a "traveling exhibit," are to be placed on view in Cleveland and Detroit, and possibly in Boston, Hartford, Philadelphia, St. Louis, Cincinnati, St. Paul, Denver, San Francisco, Los Angeles, and probably in other cities, eventually becoming part of the working equipment of some American school of architecture, which will be selected later.

A RECENT SYMPOSIUM ON CHURCH ARCHITECTURE

THE Conference of Church Bureaus and Departments of Architecture and the Home Missions Council of the Protestant Churches held lately in Chicago a two-day's conference on church architecture. The conference was attended by a considerable number of architects, clergymen, denominational officers and others. Addresses were given by Professor Watson of the University of Illinois on acoustics, and by Dr. Von Ogden Vogt on art and religion. Other addresses were on church organs, stained glass, financial methods, promoting building campaigns, etc. The addresses were followed by discussion, and an interesting letter from Ralph Adams Cram on architectural education was read. Stereopticon views of many modern churches and floor plans were shown during the two-days' session.

The matter of securing well trained architects who are intelligent as to the architectural history of the Christian Church and who are sympathetic with the ideals and objectives of the Church was discussed at length, the churchmen claiming that the architectural colleges are giving little recognition to the needs of the modern Protestant Church, though some give attention to problems of chapels for millionaires' estates, circular or octagon chapels, and synagogues. The situation was rather sharply criticised in view of the apparent utter lack of sympathy on the part of the colleges with the Gothic, and also from the fact that one Protestant body alone spent $20,000,000 on new church construction in 1926. The obtuseness of church committees came in for a good share of criticism by the churchmen, it being claimed that the taste of the people is improving, and that the churches realize better what they need to provide for.

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The ARCHITECTURAL FORUM

Volume XLVII DECEMBER 1927 Number 6

Library Planning

By EDWARD L. TILTON

LIBRARIES are not exempt from the operation of the universal law of evolution, under which organisms develop from the simple to the complex. Fifty years ago a library was a book dormitory, where the librarian slept with his tomes, seldom disturbed by the public; today it is a center of multifarious activities. In earlier days a person would go miles for a book; today it must be within effortless reach. The modern librarian advertises his wares like a merchant and strives to excel other libraries in the registration of readers and in book circulation. The degree of service depends largely upon location, the size of the community, and upon the abilities of those in control, seconded by a properly arranged building, planned to accommodate readers and books economically and yet attractively.

Site. To facilitate such service the library should be easily accessible to the expected clientele. In a small town, where one building suffices, it may well be placed on a side street near the shopping center. A large city requires branch libraries to bring the books within reach of every home. The lot should admit of having ample light and air. A site sloping from front to rear benefits the basement and facilitates service. Many factors control the choice of a site, but the matter of cost usually dominates. The bibliophile or dilettante might prefer a shaded and befountained park, but business men, on the average library board, visualize the world through their pocket-books, and the economical site generally wins!

Determination of Size. The site determined, it is necessary to calculate the dimensions and proportions of the building. The architect should study the librarian's requirements and convert the data furnished into a proper solution of the problem, to do which requires time and experience. He should estimate the size of building possible for the appropriation or, *vice versa,* compute the amount of money necessary to construct and equip a suitable building, a structure appropriate to its surroundings.

The design of a library involves the hygienic accommodation of the greatest number of readers; the housing of the maximum number of books; and the architectural expression of the building's purpose. With a given appropriation, it is necessary first to estimate the size and quality of the structure before developing the plans. Building costs vary in different sections of the country, but an average, which will include all items, may be struck on this basis:

General construction, exclusive of metal stacks	57 per cent	
Plumbing, heating, electric wiring and fixtures....	13 per cent	70 per cent
Metal stacks, wood shelving and equipment.....		20 per cent
Architect's fees and allowance for contingencies....		10 per cent
		100 per cent

Assuming an appropriation of $300,000, 70 per cent would be $210,000. Dividing this by cubic foot cost of say 50 cents, gives 420,000 as the cubic foot limitation. The height of the building, to include basement and two stories, would approximate 42 feet, which divided into 420,000 yields 10,000 square feet as the ground area of the structure. With the appropriation of $300,000 we should endeavor to house 300,000 volumes and to accommodate 300 readers simultaneously seated, allowing 30 square feet per chair, which would require 9,000 square feet total floor area in the various reading, reference, children's periodical, club and similar rooms. The 300,000 volumes may be apportioned 250,000 to the stacks and 50,000 to shelving throughout the various reading rooms. Five stories (each of 7½ feet) of stacks may be contained in the height of the building, allotting to each story one-fifth of the 250,000 volumes or 50,000, which divided by 20, the average number of volumes per square foot of stack space, seven shelves high, gives as a resultant, 2,500 square feet as the ground area probably necessary for the stacks.

Rather than carry the stacks vertically through the building, it is better, where possible, to arrange two or three tiers of stacks below the first floor. For two such stories the 250,000 volumes would require 6,250 square feet, and for three stories, 4,166 square feet. This arrangement has given satisfaction in the libraries at Wilmington, Del., and Highland Park, Detroit; (Plates 105 and 98) in the Knight Memorial at Providence (page 501), and elsewhere. Such

stacks can be kept in the darker central part of the basement (which is better for books than sunlight), thus giving the lighter portions of the basement to work rooms, for which good lighting is necessary.

Properly constructed stack spaces are readily warmed and ventilated, owing to the vertical slits at the bottom of each tier, whereby air circulation is engendered. In a large building, whose cost exceeds a million, it is possible to combine both arrangements of stacks, by extending them vertically through the central portion of the building so that the periphery of the structure on each story may be allotted to readers or workers. An economical library plan devotes minimum spaces to lobbies, corridors, stairways and such "circulation," and the maximum areas to the library proper. In some monumental library buildings one-half of the ground area is used for walls, halls, stairs, etc., but it should be possible to limit them to 20 per cent of the area, and yet do justice to their functions.

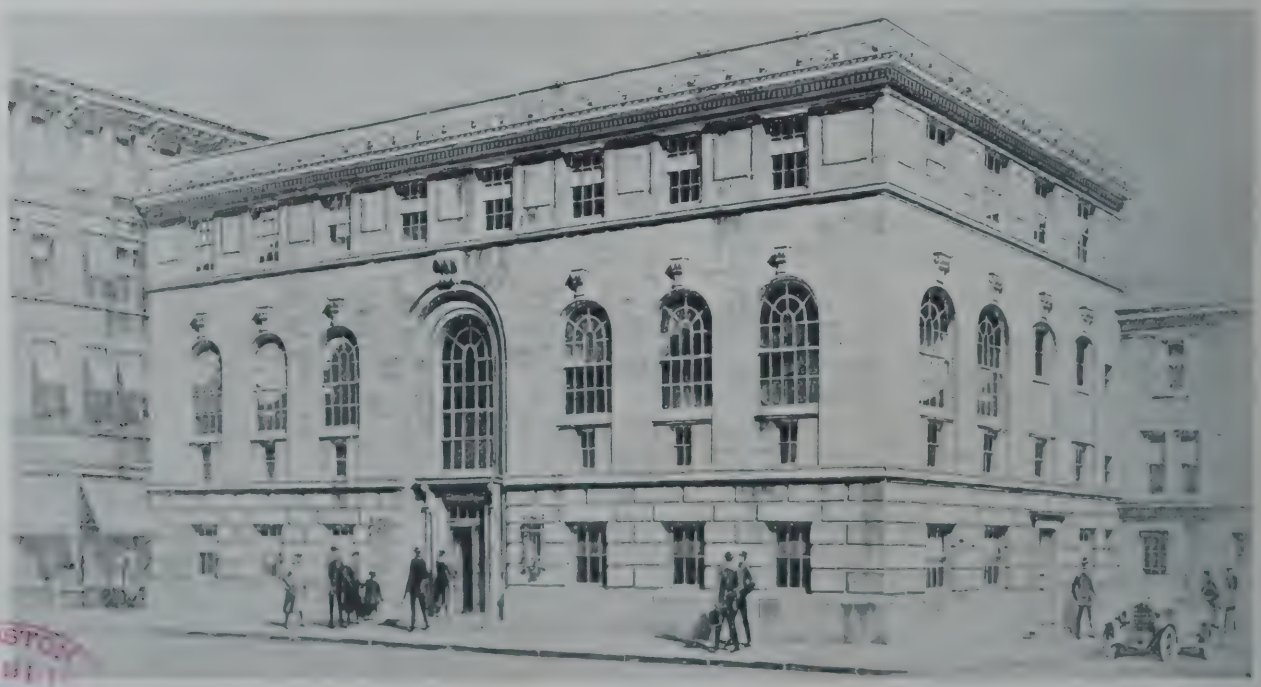
In the example under discussion, deducting 20 per cent from the 10,000 square feet, will leave 8,000 square feet, net area, in the basement and first story and (allowing for possible light wells) 6,500 square feet in the second story, or a grand total of 22,500 square feet. These areas may be apportioned among the library's departments, possibly on this basis:

Charging and delivery	1,000	square feet
The various reading rooms	9,000	" "
Stack (area of two tiers in basement)	6,250	" "
Catalog, work rooms and toilets	2,750	" "
Librarian and staff rooms	2,000	" "
Lecture room	1,500	" "
	22,500	" "

The boiler and coal room might be below basement level, where in many instances they actually are.

Provision for Expansion. The size of a library building bears a natural relation to the population it is to serve. During the pre-war years, the Carnegie Corporation's donations were figured on a basis of $2 per capita, but with the increased costs of construction, $3 scarcely suffices, except for the simplest types. Where a new building replaces an older, there is usually an immediate increase in the patronage and within 10 to 15 years it becomes congested and requires expansion for both readers and books. It is well, therefore, to design the building so that it may be enlarged. Where such expansion has not been originally considered, it very frequently requires considerable ingenuity to secure a good result. The plan of the Saginaw Library accomplishes the purpose by changing location of the main entrance, which the corner lot made possible.

Admission, General Control, and Delivery Room. "Entrance at grade level" is a slogan with some librarians. It precludes, however, having a well-lighted basement. This presents the alternatives,—less exertion for the readers or more light for the workers. If the lot slopes sharply, both are attained. A library building is a "free for all" club house with no social barriers. Casual pedestrians are allured by electrically lighted bulletins and by book exhibits in the front windows designed like shop fronts. In a small library the adult public should enter and leave by one main doorway, admitting them through a vestibule, to delivery room. A separate entrance for children may be desirable. The delivery counter, in a small library, should be near the entrance,—ample space behind being more serviceable than excessive area in front; people enter singly or in small groups,



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Pack Memorial Library, Asheville, N. C.
Edward L. Tilton, Architect

but congregate beyond the counter. The delivery room is the heart of a small library; its pulsations vitalize every part. To minimize the personnel required, the control must be centralized by locating the delivery (or charging) counter where it commands readers, book shelves, and entrances. Where crowds are served, it is advisable to have a restraining rail to keep the people in line by the counter.

In large libraries auxiliary desks in the different reading rooms are centers of information and control. A formation that radiates from the central counter, like staff officers surrounding their superior, is ideal for control and for economy of administration. The size and components of every delivery counter depend upon the librarian's requirements and vary too much to be detailed here. There are three main elements,—registration; charging or loaning; and receiving. In large libraries three separate counters may be necessary. The delivery space is the center of movement and commotion; it should be so disposed as to offer the least annoyance to those using the reading rooms. An adjacent room wherein to shunt garrulous gossips is a desideratum.

The delivery room should be well lighted, and its location may necessitate skylighting, in which case "actinic" glass in the ceiling sash will exclude the heat without interfering with the light rays. In cool climates diffusing glass of various kinds may be used. Ample artificial illumination, well distributed, is essential. The room should appeal by appropriate decoration in form and color. It should contain display racks for new acquisitions and informing bulletin boards. Settles are not out of place, and from the room may extend "open" fiction shelves, forming alcoves where the public may browse, and take the selected books to the charging counter to be recorded.

Circulation Department. In a small library this department is combined with the delivery room. In a large library it may be segregated from the reading rooms and be provided with a special street entrance, as in the New York Public Library. The importance of a library is based largely on the number of books circulated annually. Librarians of different localities vie with one another in enlarging their respective "circulations,"—sometimes at a sacrifice of the quality of books distributed. The workers in this department have opportunities of encouraging the use of edifying books. Bacon said: "Books can never teach the use of books," so the librarian's knowledge may happily aid in directing the ignorant or uncertain readers to higher ideals.

Reading Rooms. The comfort, convenience and seclusion of the public are enhanced by the proper location, arrangement and design of the reading rooms. The collaboration of librarian and architect is here vitally necessary. The size and shape of any reading room can best be determined by plotting out the furniture. The tables should be spaced about 5 feet apart and the same distance from the walls of the room. The details are too varied to enlarge upon here, since the individual preference of the librarian and the requirements differ with every locality. But a fundamental condition, applicable to every case, is that of maintaining a reasonable pro-rata cost per reader accommodated. In our suppositive problem we have allowed 9,000 square feet for reading and ancillary rooms, to accommodate 300 readers at 30 square feet for each. The appropriation being $300,000 makes each of the 300 seatings represent $1,000 outlay, which is less than a third of the cost of the reader's seat in many large city libraries, built at considerable expense.

Delivery Room, Knight Memorial Library, Providence
Edward L. Tilton, Architect

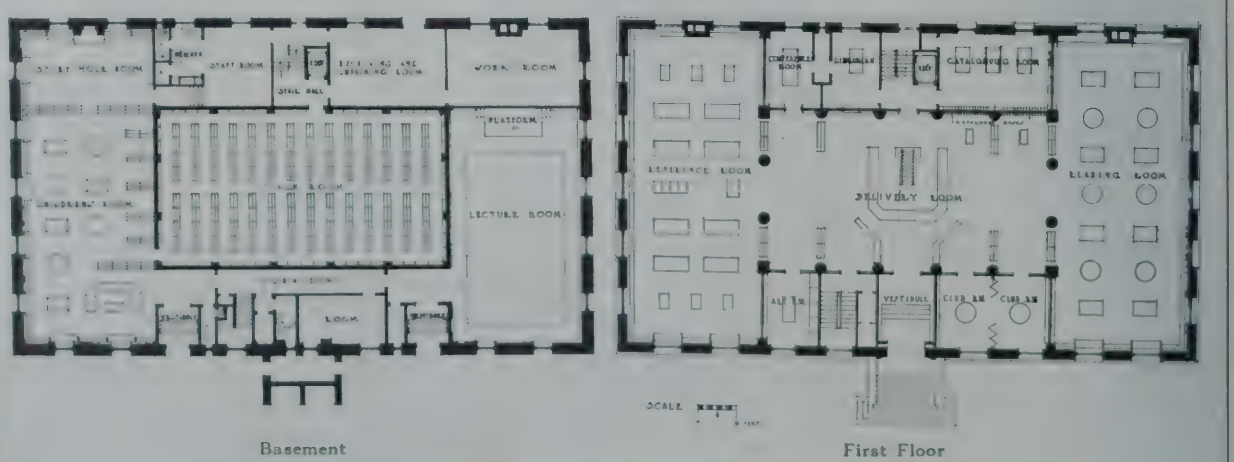
The selection of reading room chairs may make necessary a choice between beauty and strength,—two qualities that do not always combine. The "Windsor" type is attractive, but it seldom withstands hard usage; the most enduring seems to be a chair without arms, with wood saddle seat, and with back, seat and legs thoroughly framed together and reinforced. The tables should be built up "five-ply," with softwood cores veneered with the hardwood selected for the finish of the room,—preferably oak for service and for excellence of appearance.

Shelving. The book shelving should have a fixed bottom shelf, 4 to 6 inches above the floor level, with the other shelves carried on pins which fit holes in the uprights bored every inch apart in height to permit of adjustment for different sized books; a basis for total height is 11-inch centers between shelves, which will give from 6 feet, 10 inches to 7 feet for a total height of seven shelves including base and cornice. A depth of 8 inches suffices for the shelves excepting those for the larger volumes, certain reference books, encyclopedias, and technical works. The wall shelving requires no wood backing, but may set against the plaster, unless it conceal heating coils, in which case the shelving must be supplied with wood backs insulated with asbestos and sheet metal to shield any books from the heat. Shelving cannot be properly made by the ordinary mill but only by manufacturers accustomed to cabinet construction. This applies to the furniture and technical library equipment throughout. Other concomitants to the rooms under discussion are dictionary stands, atlas cases, filing cabinets for clippings and for photographs. For atlases and folios, tables with sloping tops are convenient. The floor covering of all readers' room should be resilient and quiet. Cork carpet or cork tile are used largely in many libraries.

Newspapers and Periodicals. Newspaper reading in libraries is generally discouraged. As much space is occupied by the reader of a two-cent paper as of a two-dollar book, and newspapers are cheap enough for everyone to buy his own. Such a room is likely to become a dormitory for vagrants who seek it for repose rather than for edification. Some of the large libraries, however, allot space to current newspapers and storage for the bound volumes, for the use of persons with legitimate motives. For such rooms high stand-up desks with broad, sloping sides discourage loafing. Small libraries may subscribe to their local dailies,—a half-dozen of them can be filed in a section of wall shelving in which the shelves have been replaced with cleats attached to the sides and sloping from top-rear to bottom-front, with hooks or rebates to hold the files.

Periodical space is indispensable. In college libraries, periodicals are cognate to the reference books and frequently impart more recent information. They may be variously cared for,—sloping shelves for the current periodicals with horizontal shelves beneath each, to hold the previous issues until ready to bind; or horizontal shelves, 4 inches apart, properly labeled for the current numbers with cupboards below for back numbers. In either case the shelves for displaying the magazines should be within eye range of a standing person to be entirely practical.

Catalogs. The catalog cases should be accessible to the public, the delivery counter, the reference room, and the cataloguing workroom. It is difficult to locate them contiguously with all four elements enumerated, so the cataloguing room is likely to be sacrificed. One solution is shown in the Knight Memorial Library, where the catalog trays are planned to slide both ways. The writer invented this system 25 years ago for Juniata College. It would not suffice for large libraries, where conflicts would arise too frequently between users on opposite sides of the cases. Such libraries must incur the expense of duplicate catalogs; the children's department, fur-



Basement First Floor

Plans, Knight Memorial Library, Providence
Edward L. Tilton, Architect

thermore, will need its own in most instances.

The standard tray holds 1,000 cards, or a possible 1,200 of thinner paper. Averaging five cards to a title, there would be required, for our imaginary 300,000 volumes, 1,500,000 cards, which would require 1,250 to 1,500 trays. It is desirable to limit the case height to 15 trays (13 are better), which would necessitate 84 to 100 trays horizontally. The width of trays approximates 6½ inches center to center. Therefore the lineal extent would be 45½ to 54½ feet, unless in double rows. Some standard cases have sliding shelves to rest the trays upon while consulting the cards, but this is objectionable, since one person obstructs the access to many other trays. It is better to have small "stand-up" tables, approximately 40 inches high, upon which to set the trays, the tables covered with a cork or similar surface. Separate catalog cases may be required for special collections, such as those devoted to music.

Special Departments. The sub-division of departments under special heads depends upon the demands made upon the library. In manufacturing towns it is necessary to have collections of germane technical works. Books on patents and patent law are closely allied to the technological. Differing from these in appeal are the art and music collections. Each art folio should be laid flat on roller shelves. Broad tables with sloping tops are desirable for consulting the folios. Valuable books should be in cases with locked doors whose panels may be of wire mesh or glass. Thin music scores, if shelved upright, require racks with partitions not over 12 inches apart or with adjustable supports on the shelves. Large maps in frequent demand may be hung on spring rollers from a "canopy" at the ceiling. The average-sized maps should be pasted on muslin and folded to the dimensions necessary to fit shallow drawers designed for them. Photographs and clippings should be mounted and filed vertically in cabinets whose deep drawers are provided with cloth separators that slide along small rods. Very large photographs and pictures can be kept in portfolios placed vertically in cupboards with doors hinged at the bottom, to afford ease of access.

Children's Department. Ever-increasing thought and effort are being expended upon this department to coöperate with the schools in developing good citizens. Branch school work has grown to large proportions. Publishers are specializing in juvenile books issued in such numbers that shelf room needs frequent expansion. After school hours the children crowd to the library, and it is noteworthy that the parents of the majority are of foreign birth. In Cleveland's libraries the children must wash their hands before handling books, a useful lesson in cleanliness, which results in many improved homes.

Children are restless, and in a library they must be segregated from the adults either on the opposite side of the building under supervision of the main desk, or in another story. If in the basement, especial care should be taken to make the rooms dampproof, airy and light. This position permits of direct entrance from the outside. If placed in an upper story the children should not enter the adult sections of the building. The problem has been solved at the Mount Pleasant Branch, Washington, where an outside stair admits the children to their department, divided into separate spaces for the "little folks," the grammar, and the high school grades (Plate 106). The heights of chairs and tables for children are proportioned to the users. The standard table top for children is 30 inches by 52 inches, the adults' 36 inches by 60 inches, dimensions practically standard.

Club rooms in town libraries and seminar rooms in college libraries are essential adjuncts. Advance notice to the librarian gives opportunity to prepare the books on the given subject, ready at the time.

Staff Offices and Work Rooms. Comfortable

Knight Memorial Library, Providence
Edward L. Tilton, Architect

quarters for the staff, including rest room, locker room, toilet room, possibly with shower, and kitchenette, will yield better returns in efficiency and library results than those obtained from a disproportionate lecture room. A good librarian and an efficient staff are as essential to a library as a competent president and faculty are to a college, and it is equally important to maintain esprit de corps in a library.

In a small library it is usually necessary to locate the librarian's office within easy reach of the delivery counter, but in larger libraries the librarian should be more secluded, where he can work with less chance of interruption. It is well for his room to be large enough to hold a table where the trustees may assemble for occasional board meetings, for which a separate room is an unnecessary luxury except in metropolitan libraries where it may be excusable. Combining the librarian's and trustees' rooms gives space to the former to conduct his work in unhampered quarters and to have his documents at hand when the trustees require his reports. A secretary's room adjacent, where the callers may be received and their business analyzed without unnecessarily interrupting the librarian, is desirable. The working space and rooms should be ample to insure the proper running of the machinery of administration. The order and cataloguing rooms should be near the librarian's office, for convenience of supervision, and should be within easy reach of the stacks either on the same level or by lifts. They are equipped with typewriters, shelf list cases, shelving, and work tables. Good light and air are vital to ensure the health of the occupants and to enable them to prosecute their arduous work effectively. A floor covered with cork carpet or good mastic is usually satisfactory, noiseless, and easy to walk upon.

A bindery is not necessary except in very large libraries, since it is usually cheaper to send books out for rebinding; but a room or space for ordinary repairs is desirable, and means should be supplied for warming the glue pots. Lavatories and sinks are requisites in all work or repair rooms. A receiving and unpacking room in basement or at grade level should communicate by lift with the work rooms just mentioned. The lift should be large enough to accommodate a book truck and one or two people. An electric push-button lift is the most useful. Passenger lifts for the public are expensive to install and to operate and are unnecessary except in buildings of several stories, where upper floors may be devoted to exhibition or lecture rooms much used.

Galleries for Exhibits. Exhibits of paintings and historical or other collections have educational value, but the cost of space required usually overbalances their value in a library. Collections increase by donations, often of questionable merit, and with the constant growth of the library, a state of mutual crowding is engendered which embarrasses both. It is better to devote the building to library work and to house collections in a separate structure. If a delivery room runs through two stories with a gallery around the upper level, it is profitable at times to utilize such space with museum cases for the exhibiting of small objects germane to the library work. Appropriate paintings, pictures and illustrations in the children's room are always desirable and are not to be excluded elsewhere on the library walls if hung where they do not attract gazers to the detriment of readers. Statues and plaster casts of æsthetic value are likewise desiderata when properly placed in relation to the architecture of the building.

Lecture Room. The lecture room, unless usable

An Interior, Knight Memorial Library, Providence
Edward L. Tilton, Architect

for other purposes, is likely to make the least return and should not, therefore, be too large nor occupy valuable space on the main floor. For this building the lecture room need not accommodate more than 125 to 150 seats, for which 8 to 10 square feet per seat are necessary to allow for aisles and platform space. The cubic feet content of such a room, with a 12-foot ceiling, would be 18,000, and at 50 cents (the cubic foot cost of our building) would represent $9,000 as the amount invested in the lecture room. Interest at 6 per cent would be $540, to which must be added the expenses of light, heat and janitor's labor. It is usually better economy to hire a hall in the neighborhood for lectures and entertainments and to omit such a room from a library building, or at least to reduce it to very small dimensions. In a Philadelphia branch the children's room is converted on occasion into a lecture room, a large table becoming the platform. The combination works well, since the hours of use do not generally conflict.

Furniture. The furniture will consist of delivery or charging counter, catalog cases, bulletin boards, tables, chairs, shelving, and the various items of equipment for the rooms devoted to periodicals, newspapers, fine arts and special collections, as well as the suite for the librarian and staff, for the cataloguing and work rooms, and for the lecture room. Our building, as before said, is intended to accommodate 300 readers, and for convenience we can assume that the tables will be the standard 3 feet by 5 feet size for four persons, making a total of 75 tables and 300 chairs. The 50,000 volumes to be distributed throughout the rooms will need about 1,000 feet of bookcases, five shelves high in the children's room, and seven shelves high elsewhere, and will cost about $7,500, if made properly. Metal shelving can be installed for nearly the same price, but it is usually not so attractive in its appearance.

Stacks. As before indicated, the amount of stack required may be calculated by multiplying the square foot area of the stack room by 20 volumes, if but one tier of seven shelves he required; by 40, if two tiers be required, and so on. Conversely, if we wish to know the size of stack room necessary to house 300,000 volumes in one tier, seven shelves high, divide by 20, giving 15,000 square feet; for two tiers, divide by 40, giving 7,500 square feet; for three tiers, divide by 60, giving 5,000 square feet, and so on. Metal stack construction is an invention of recent years, and its rapid development has kept pace with modern library demands. There are several makes of metal stacks upon the market, each claiming to have special features of superiority. A few systems are suitable where the conditions impose heavy loadings of superimposed tiers, and where compactness and strength are desiderata. The weight of each tier of stacks, with its complement of books, may be figured at 125 pounds to the square foot. The cost may be roughly computed at 50 cents per cubic foot of stack, including floors.

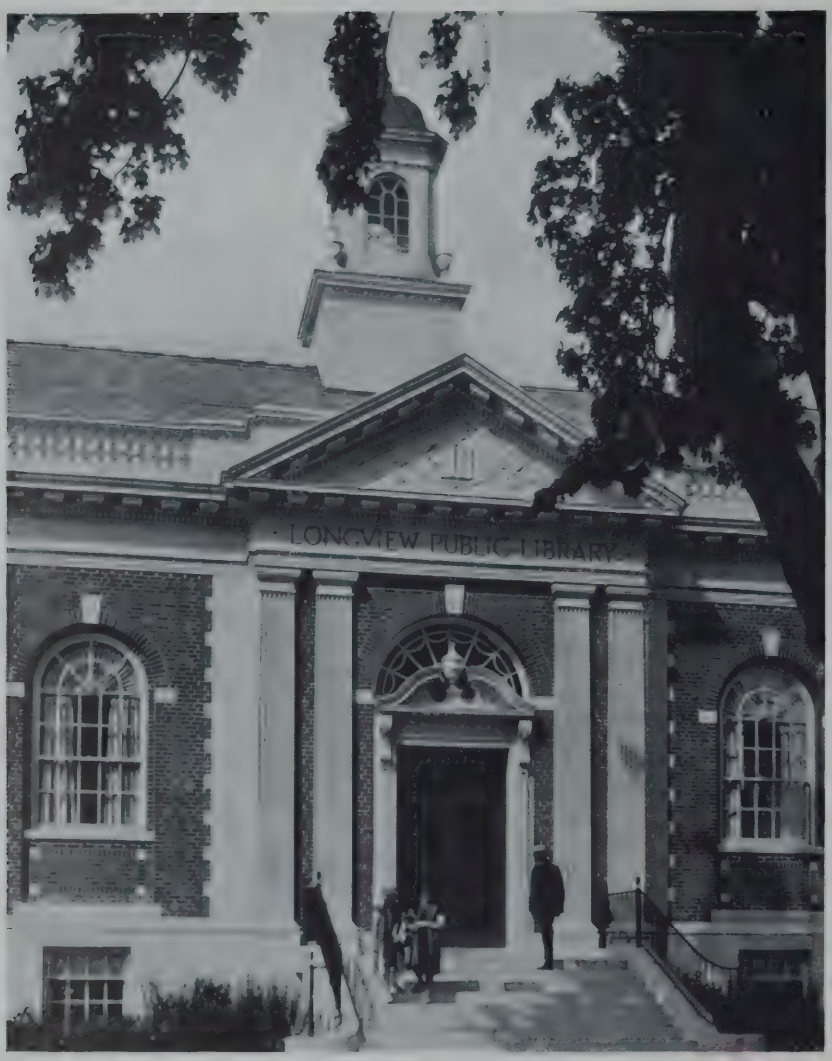
There are two general types of metal stacks, the so-called "standard type" and the "bracket type." There are radical differences in the construction of the various makes of stacks and in the use of cast iron, steel, and pressed or sheet iron. Before selecting one, a careful consideration should be given to the different types and makes, from full-sized models or, when possible, from work actually installed. Space will not permit of an analytical description of the different makes, but general points may be indicated, which might aid in selecting a type.

(A) Narrow upright supports between shelves

Photo. George R. King

Catalog Cabinets; Pasadena Public Library

Myron Hunt and H. C. Chambers, Architects



Entrance, Public Library, Longview, Wash.
Torbitt, Hoyt & Hoyt, Architects

make for economy. The space of a half-volume gained means 1½ to 2 per cent increased volume capacity; that is, 1,500 to 2,000 volumes additional in every 100,000. This gain should be considered when the comparative prices of different makes and types of stacks are being judged before choosing.

(B) The provision for electric wires and switch plates on the stack ends is a point to be observed.

(C) The method of support for the electric conduits along the stack ceiling is important. They should not be wired to small beams, but holes should be drilled through the beams to support conduits.

(D) Many stacks are finished green, the color baked on. It is possible, however, to have the stacks finished in cheerful, light tones, though they soil more easily with the constant use they receive.

(E) If several superimposed stack stories are required, some makes of stacks are to be preferred.

(F) The usual length of shelves is 3 feet, but there is an alternate length of 3 feet, 6 inches, which permits an appreciable increase in volume capacity.

(G) The shelves are usually made of solid sheet steel, but there is also a shelf consisting of a parallel series of inverted U-shaped sections, connected with separators, which is stiffer than the plate shelf and which is often used.

(H) The ventilating slit below the bottom shelf, at the floor, should be vertical, not horizontal, as it is in the older stack types.

(I) The shelves should be adjustable, every inch in height. The story height from floor to floor of each tier should be approximately 7 feet, 6 inches; in some cases it can be 7 feet. Less than that allows insufficient headroom for the ceiling lights in the gangways. The heights given admit of seven shelves with an average spacing of 11 inches and permit the lowest shelf to be raised above the floor with a vertical ventilating slit, and allow for thickness of supporting steel and flooring of the tier above, which are important details.

(J) For the stack flooring avoid glass, once much used from a fallacious idea that it admitted light to the upper shelves of the tier beneath. The light reflected from white marble, painted concrete or similar flooring is better.

In colleges where the upper classes and the honor men are allowed access to the stacks, it is well to provide small study alcoves, which will be much used.

These suggestions do not exhaust details to be considered in weighting the relative prices and qualities of the different makes and types of stacks. To repeat, the lowest bid is not always the most economical; the number of volumes shelved and the quality of workmanship and service should be considered as highly important factors.

Lighting. The lighting of the library is of paramount importance, and to accomplish a satisfactory result it is well to follow the school house requirements and make the total glass area of reading rooms equal to 20 per cent of their floor areas. The light from the windows will be effective in the room for a distance equal to about one and one-half times the height of the top of window from the floor. Ceiling lighting will be advisable for spaces not properly lighted by windows. The spacing of the bays or window openings is controlled, practically, by the ceiling heights and, æsthetically, by the effect to be produced. The classic proportions of a window are, height twice the width, or in some cases, one and one-half times the width. The height is limited in a reading room by the distance between the top of the wall shelving and the ceiling. In a room with a

15-foot ceiling and 7-foot high shelving, there will be only 8 feet above the shelving or, allowing one foot for a cornice, but 7 feet left for height of window, which should be either 3 feet, 6 inches or 4 feet, 3 inches wide. The spacing between window axes will need to approach 8 feet in order to insure sufficient light.

Here are two hypothetical developments of these suggestions:

(A) Reading Room, 61 feet long by 25 feet wide,—area 1,525 sq. ft.

Net glass area, one-fifth of 1,525, equals 305 sq. ft.

Ceiling of room, 15 feet high.

Windows 7 feet high by 4 feet, 8 inches wide, equals 32⅔ sq. ft.

10 windows required, six on the side and two at each end.

Windows spaced approximately 8 feet, center to center.

(B) Reading Room, 141 feet by 35 feet,—4,935 sq. ft.

Net glass area, 987 sq. ft.

Ceiling of room, 20 ft. high.

Windows 12 ft. high by 6 ft. wide.

15 windows required, 11 at the side and two at each of the ends.

Windows spaced at distances approximately 12 ft. on centers.

Note that Room A will accommodate 14 tables, 3 ft. x 5 ft., in two rows of seven each, and that each table will seat four readers; a total of 56 in a room of 1,525 sq. ft. or 27 sq. ft. per reader. Similarly, Room B will accommodate 51 tables in three rows of 17 each, and 204 readers in an area of 4,935 sq. ft., 24 sq. ft. per reader. It is preferable, however, to allow 30 sq. ft. per reader, since some of the tables will be omitted to allow room for a possible information desk, filing cabinets, dictionary stand, and similar items of equipment which the librarian may perhaps wish to install.

Hill Avenue Branch Library, Pasadena
Marston, Van Pelt & Maybury, Architects

BOSTON PUBLIC LIBRARY

Objection is sometimes made to the "prison-like" aspect of a room lighted only by windows above the line of the 7-foot high wall shelving. To obviate this, it is possible to introduce occasional small "squeezer" windows framed in the shelving. If properly handled, these openings improve the exterior effect. Or, the window sills may be brought lower by sacrificing some small extent of the shelving.

Artificial illumination is produced by various types of electric lamps, of which the nitrogen is one of the more recent. The amount of light required may be roughly figured at a minimum of one watt for each square foot of floor area when a direct lighting system is used. Indirect or semi-indirect lighting will require more wattage per square foot. The net area inside the walls of approximately 9,500 square feet, that is, 10,000 less the walls, will require for proper direct illumination enough lamps to yield at least 9,500 watts. A number of small wattage lamps in a ceiling fixture is better for the eyes than fewer large wattage lamps. In general, the lighting should be arranged to produce an evenly distributed illumination and to avoid bright spots. Illumination by fixtures depending from the ceiling yields good practical results. Table lamps for readers are expensive, and the necessary floor receptacles prevent the ready shifting of tables. In a browsing room stand lamps with easy chairs make for comfort, but the combination is expensive. Candelabra or torcheres may be used effectively in the delivery room. In the catalog, work, staff and librarian's rooms, base receptacles must be conveniently distributed. The panel boards for the lighting circuits are well located when on or near the delivery desk, within easy reach.

To illustrate a method of computing the outlets, wattage and circuits required, we can refer to Room B, just described, with an area of 4,935 square feet.

Since we cannot foresee whether other than direct lighting may be demanded, it will be best to allow 1¼ to 1½ watts per square foot. There are 11 windows on the side of the room and two at ends; therefore the ceiling outlets can be located on the window axes, making two rows of 11 each,—22 outlets at 300 equals 6,600 watts. If properly wired, these outlets may be included in five circuits (1,320 watts each) controlled by switches conveniently placed; although another determining factor is the number of lamps on each outlet. If we use 25-watt lamps, 12 will be required for each outlet to give a total wattage of 300, and local underwriters' regulations may require a separate circuit to each outlet. The stacks would be lighted by conduit boxes, 6 feet on centers, in the aisles between stacks controlled by switches at the ends of the stack tiers. In addition to the light wiring, allowances should be made for an interior telephone system, for public telephone connections, for call bells, clock system, vacuum cleaner, electric elevator and book lift, and, questionably, a pneumatic tube system.

Heating. Libraries are usually steam-heated, for which the square feet of radiation may be roughly calculated by the Mill's formula of 2-20-200, the sum of the glass area divided by 2; the solid wall area by 20; and the cubic feet content of the room, by 200. For example, our building, we assume, has a net area within the walls of 9,500 square feet by a height of approximately 40 feet under the roof, which gives 380,000 cubic feet. The glass area equals 1,900 square feet (or 20 per cent of flood area); the wall area equals the periphery of the building (150 plus 70 plus 150 plus 70); 440 lineal feet, by 40 feet height or 17,600 square feet less the 1,900 feet of glass, or 15,700 square feet. This formula will apply:

$$x = \frac{ga}{2} + \frac{wa}{20} + \frac{cc}{200}$$

in which x equals the square feet of radiation required; *ga* equals glass area of windows and ceiling lights; *wa* equals solid wall area; *cc* equals cubic contents. Applying this formula, we obtain the results:

$$x = \frac{1900}{2} + \frac{15{,}700}{20} + \frac{380{,}000}{200} = 3{,}625 \text{ square feet of}$$

radiation. If the radiation be concealed behind shelving or seats, it should be increased by about one-third or say, 1,200 square feet, giving, say 4,800 square feet, to which add 50 per cent for piping and for reserve power on boilers; or 2,500 added to 4,800 yields 7,300, which indicates the requisite boiler rating. The cost of the installation may approximate $4 per square foot of the radiation, 4,800, or say $19,200. An additional percentage of radiation should be allowed for exposed walls on north sides and for ceilings under flat roofs.

Ventilation. The mechanical ventilation in an ordinary library may be limited to the lecture room and a possible small amount in the shape of "univent" or "direct-indirect" for certain of the reading or work rooms. A "plenum" system for the entire building is expensive to operate, and experience shows that the use of the fan is likely to be discontinued. The writer has arranged a simple system, first tried in Cleveland and since installed in many buildings, by which the radiators or coils are concealed back of insulated shelving with openings at floors and at tops of cases to permit the circulation of air. When the shelving runs beneath windows, either high or low, there is an opportunity to arrange an effective method of ventilation by opening the window slightly and inserting a deflector. Even with closed windows there is a continual circulation of the room air engendered by the spaces containing radiators between the walls and the back of shelving which act like flues. Chilled by the windows, the air is kept moving, which is the secret of ventilation.

Construction. Statistics have indicated that but few modern libraries have been destroyed by fire. Therefore, in districts where fireproof construction is not compulsory and the moot question arises between more space if non-fireproof, or less, if fireproof, it is likely to be decided in favor of the former. The use of non-fireproof construction has increased, however, with the upward trend of prices, so that the difference between it and fireproof construction is much less than during pre-war years. Reinforced concrete with pan or slab system is suitable for library buildings and usually costs less than steel beams and terra cotta blocks.

Decoration. Planning is for the mathematical, practical mind that unifies the heterogeneous elements into a systematic whole. Designing is for the artistic spirit that produces an exterior of beauty, symmetry and proportion. The architect should combine the ability to plan and to design, in order to produce an appealing result. Artistic decoration and mural painting enhance greatly the spiritual elevation which a library should propagate, like manna, to the hungry soul; but mediocre work is worse than plain walls. Appropriate planting enhances the beauty of the whole. Shrubs conceal the hard lines where the base of the building meets the ground. The construction resembles the human skeleton, similar in white, black and red man, child and adult, while the flesh covering of some may be beautiful and of others the reverse. The style may be Classic, Gothic or Renaissance, the materials may be marble or brick, but it is the spirit shining through that appeals.

The Librarian's Ideas of Library Design

By ARTHUR E. BOSTWICK
Librarian, St. Louis Public Library

THE architect is the only artist who has to consider utility. His function is to produce a result that will be satisfactory for its intended purpose and that will also be beautiful and fitting. Not all architects have lived up to this program, as no one knows better than the architects themselves. In many cases this is by no means the fault of the architect but of those whose business it has been to advise him regarding the uses of the building. Librarians and library boards, I am afraid, will have to take their share of condemnation for faults of this kind. In the cases of some very notable library buildings, no working librarian was consulted at all in connection with the plans, and the result was that the library boards and the architects were both deprived of knowledge necessary to make a workable structure. In one case, indeed, this method of procedure cost the library board the tidy sum of $50,000, which was the amount necessary to fit the building to its proper uses. Following one or two cases of this kind, librarians who had the requisite influence with their boards have sometimes prepared complete programs covering the sizes, number and relative positions of all the rooms in the libraries and required the architects to work to these programs, a procedure that is really as unfair to the architects as the reverse is to the administrators. Obviously, the logical method is for the administrator and architect to work together, being in close consultation at every stage of the planning, so that the result will be both useful and beautiful, the utilities not interfering with the artistic effect, and the latter not hampering the former; only thus can success be had.

It has been my good fortune to plan a large number of library buildings with some very eminent and competent architects, and in no case, I believe, did any of us have occasion to find fault with the method employed. If this is the way things are done, the librarian's ideas of library design will certainly be incorporated therein, but I should dislike very much to feel that any architect would accept the personal views that I am about to put forward as being applicable in all cases. In fact I believe that if two libraries in different towns are exactly alike, one of them is probably a bad library. Buildings should be as individual as people and are necessarily so if they

Photo. Baker

West Side Branch, Grand Rapids Public Library
Robinson & Campau, Architects

fit conditions, local, climatic, social and economic. It is astounding, for instance, how little climatic conditions were regarded by architects of the older generation. In my own city, St. Louis, the older type of fine residence, designed mostly by eastern architects, was almost uniformly designed with apparently not the least knowledge that comfort here in the summer months is largely dependent on exposure to a south breeze. Librarians in the southern states tell me that they have there many Carnegie buildings designed by northern architects who were unfamiliar with the necessities of a summer climate. Discomfort results for both the staff of the library and its users,—and both are important to its development.

Modern Library Purposes. I am sometimes sorry that we have not adopted a more distinctive name for what we call "public libraries." The word "library" connotes, in the minds of many, a mere storage place for books, and the modern public library, although it is this, is a great deal more. The book, to be sure, is just as important as ever, but its reader has become equally important, giving the librarian and the library two units that must be taken into account instead of one. A building intended to store books with safety and a reasonable degree of accessibility is one thing; to house the vast departments that are now necessary to bring about adequate contact between book and reader is quite another thing. The late Walter Cook of New York, one of the most human and appreciative architects that I have ever known, once said to me after I had described to him the uses that would probably be made of a branch library building that we were planning: "Why, this is not to be a library at all. It is to be a community reading club." He was perfectly right, of course. That is what all public libraries have become in these modern days. The club features have become prominent, and this fact must be given its full weight in future in planning either a central library or a branch building. A branch library building designed by one of the most eminent of American architects is a striking example of his total misapprehension of such a library's use and needs. Having his mind fixed on the day when all libraries were repositories of treasures which it was necessary to guard against theft, he fitted the front windows of this building with strong iron bars, such as one sees sometimes in a bank structure, while the rear windows were protected

Photo Gottscho-H. Van Anda

Larchmont Free Library, Larchmont, N. Y.
Frank A. Moore, Architect

BOSTON PUBLIC LIBRARY

by heavy steel shutters. For a community reading club, such as this branch library building was intended to be, these things were, of course, grotesquely out of place, and they were ultimately removed.

Attracting Readers. There are two basic features of the modern library which are related to this closeness of contact between book and reader. The librarian's technical names for them are "free access" and "home use." Free access means that all or most of the books are where they can be seen and handled by the reader as freely as if they were on his own shelves at home. The latter means that their use is not limited to the library but that they may be borrowed and kept for a specified time at his house. Both these plans met at first with great objection from librarians and were for many years unjustly looked down upon. There are still some persons who think that a library where the books are carefully stored in a place inaccessible to the general reader is necessarily superior to one where the reader may see and handle them. It ought not to be necessary to say that neither of these opinions has any sound basis in fact. The old plan had its advantages and must still be used in libraries where the books are curiosities or treasures rather than the tools of education and progress. But the open shelf and free access are now so much the rule that they have been the basis of most of the changes that differentiate the new community reading club from the old library, and they are becoming more important.

The differences between the two, in fact, begin at the outside. The old library forbade, or at least discouraged, use by the general public. It was distinctly a place for the scholar, and for him alone. The new library invites the public, and it is not content with this; it strives to attract the public in very much the same way that a merchant strives to attract customers,—by making public the advantages of reading and by letting everyone know what it has to offer in the way of books and aids to their use and appreciation. To this end it is desirable that no one should pass a library without realizing thoroughly that it *is* a library and without seeing something that will interest him in it and its use, so that he will be tempted to enter. This method of attracting the public has, of course, been long familiar to merchants. We see their attractive shop windows on every street. No one can pass a shoe store without

Photo. Mattie Edwards Hewitt

Ferguson Library, Stamford, Conn.
Tracy, Swartwout & Litchfield, Architects

BOSTON PUBLIC LIBRARY

knowing not only that it is a shoe store but what kinds of shoes are for sale there. But there are hundreds of libraries that are passed daily by citizens who do not know them to be libraries; or who, if they do, do not realize the advantages or pleasures of using them. Locating a library at a distance from the sidewalk and elevating the main floor above the head of a passer-by make any such plan as this absolutely impossible. It ought to be easy for a pedestrian to look through large windows directly into the library, so that, especially at night when the interior is lighted, everything that is going on is plainly visible to him. My experience leads me to believe that in this case, the number of persons who use the library will be very greatly multiplied. Advise the proprietor of a successful retail store to move to the second floor and take down all his signs, and note his response! Much the same is the librarian's view.

Interior Book Display. Coming now to the interior of the building, we find that the prevalence of free access has materially modified the method of book storage. Fifty years ago librarians were greatly divided in opinion regarding the merits of two methods,—the unified stack system and the departmental system. In the former, all the books were shelved in classified order in a separate part of the building, generally inaccessible to the public. In the departmental system, on the other hand, exemplified in the Newberry Library building of Chicago, the books were disposed in the centers of separate rooms, each devoted to a different form of literature and each presided over by an expert. Each of these plans has distinct advantages and compensating disadvantages. Of late, librarians have been striving to combine them in such a way as to obtain the former without the latter, and although success cannot be said to have been complete, these efforts have greatly modified the interior arrangement of library buildings. The most successful compromise is doubtless that made in the new central building of the Cleveland Public Library, where there is a unified stack arrangement, but a separate reading room is in close connection with each section of the stack, all the books being thus subject to free access. Other libraries have followed suit with more or less success. This plan is expensive to administer, and it has been most successful in libraries with large incomes. But no builder of a modern library should

South Front, St. Paul Public Library
Electus D. Litchfield, Architect

neglect to study this problem and to conclude what modification of it is best adapted to his own purse and his own local conditions. It is safe to say that no completely departmentalized library, like the Newberry, and no library with a completely unified stack arrangement will be built anywhere in the future.

Providing for Expansion. The most important change, and one whose necessity can be looked forward to with confidence, is that of an extension of the building. Steady growth has been a marked feature of all our library work, and there are no signs that it will be lacking in the near future. Every library building should have adequate ground suitable for such extension. The fact that many large buildings are without such provision is making a great deal of trouble for them now or will do so very shortly. And when the building is planned its future extension should be taken into account, so that additional building will be in the nature of completion rather than of patchwork addition; but at the same time the original structure should not appear to be incomplete. Very few library buildings have yet been planned in this way, and yet experience everywhere is demonstrating the importance of this detail.

The first material extension that is likely to be needed is in the direction of book storage. Our libraries are adding to their stocks of books with great rapidity. My own library, completed in 1912, was provided with space which we estimated would last 20 years, but now, after 15 years' use, we find our storage space already congested. Such space can be added either by lateral wings connecting with the original stack room, by vertical addition in the nature of a "book tower," such as is contemplated in the new Yale Library or by digging into the earth for underground storage. There is, however, another plan, originally proposed many years ago by President Eliot of Harvard, which, it seems to me, is preferable in many cases. This involves the construction of an inexpensive storage building on cheap land, say a mile or so from the central building. All books not likely to be called for more than twice a year or so could be stored there, and with modern motor transportation it would not be much more difficult to obtain them at this distance than it is from a stack room in the same building. President Eliot's position, that it is waste of money to use a building of expensive construction on the costliest

San Francisco Library

ground in the city merely for storage purposes, seems to me well taken. The plan seems to be practical.

The use of valuable space for corridors and staircases seems largely unjustifiable. I could name libraries where as much as 50 per cent of the ground floor area is occupied by halls and staircases, usually of expensive construction. Stairs, of course, will have to be provided, but they are used only when absolutely necessary and should not be featured architecturally. We go from one floor to another now by elevator, and the elevator service should be ample. Such service should not be limited to the first hallway but provided wherever the reader goes throughout the building, especially in the stack. Instead of using small lifts for books, it is better to wheel loaded book trucks directly into the elevator in the stack. An attendant can then accompany the truck to the level where it is needed, and time in loading and unloading can be saved. In small buildings, where there are not more than two levels and where passenger elevators are not needed, book elevators save much time and strength, but they should be large enough to admit a loaded book truck. This necessitates the use of electric power. If this is not available or considered too expensive, a hand-power lift is better than nothing, but in this case it cannot be made large enough to admit a book truck.

Photo. Kenneth Clark

Entrance J. J. Hill Library, St. Paul
Electus D. Litchfield, Architect

Staff Quarters. There are still employers,—and among these one must reckon the members of some library boards,—who cling to the idea that it is possible to make a working staff too comfortable. One may hear this argument today from many who think that a comfortable worker is a less thorough worker than one who is continually subject to a certain degree of discomfort and inconvenience. I believe, on the contrary, that the more thoroughly comfortable the worker is, the better work he will do, and that care taken for staff welfare in planning a building is not only human but economically profitable. The day when every library worker had to stand up all day, had to get lunch by eating a sandwich in the cellar, had to climb stairs to go from the first to the sixth floor, and had no place to lie down when indisposed, is assuredly past. A library must have adequate staff accommodations, including a lunch room with at least a kitchenette, a rest room, and possibly also an adequate recreation room to do its best work.

Beauty and Utility. Fashion, of course, has much to do with buildings as well as with other things, but whereas one may discard clothing that is out of style for more up-to-date garments, nothing of this kind is possible with a building. Period buildings are, of course, always in vogue,—too much so, it has always seemed to me. From a librarian's point of view, an architect should strive to build something that is pleasing and impressive largely from its simplicity and fitting proportions and that will remain so through the ages. Librarians have been subject to the caprices of fashion rather more than architects. They have often insisted on some detail of construction that is temporarily in vogue, thinking wrongly that it represents a permanent improvement in administration. Library buildings designed in such cast-off fashions are to be found in all parts of the United States. Agreement between the designer of the building and those who are to use it is absolutely necessary, as has been said, but both librarian and architect should be on their guard against mistaking temporary fads for permanent betterments, as many mistakes in building will testify.

In closing, I desire to emphasize my opinion that not only the entire building but every element of it must be a combination of beauty and utility. That it should have beauty alone or utility alone will not suffice. This rules out ornamental details added merely for the sake of ornament; but it rules out as well useful adjuncts employed merely because of their use without regard to their appearance, such as ventilating stacks that seem to have been added as an afterthought. These considerations, of course, apply to all buildings but in a special degree to a library structure, which is perhaps the one public building that is constantly used by the class of adults that has, or should have, due appreciation of what is fitting and proper. A public library building must necessarily serve its community for a considerable time,—it may cater to several generations of readers,—and its very permanency constitutes a particular claim upon the thoughtfulness and resourcefulness of architect and librarian if the public is to be well served.

Photo. Fred R. Dapprich

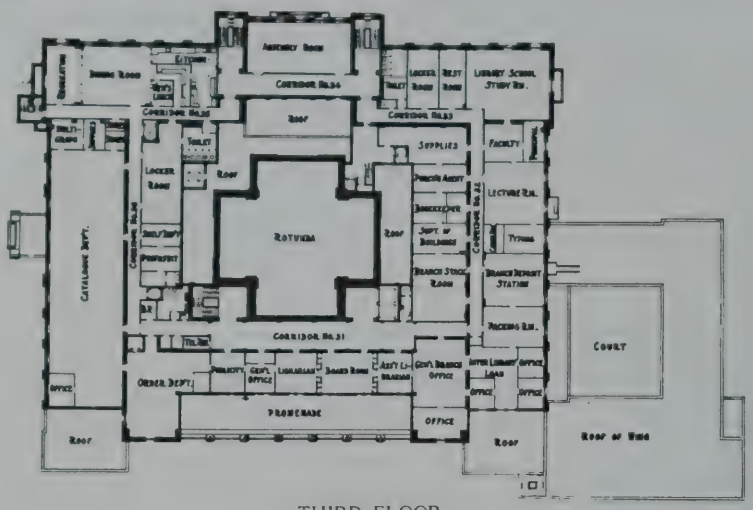
ENTRANCE FRONT

Photo. Mott Studios

CHILDREN'S ROOM

LOS ANGELES PUBLIC LIBRARY

BERTRAM GROSVENOR GOODHUE, ARCHITECT; CARLETON MONROE WINSLOW, ASSOCIATED



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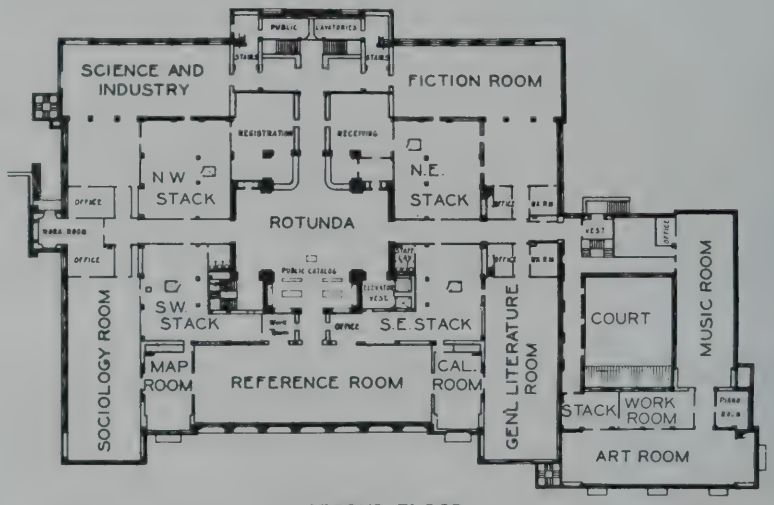

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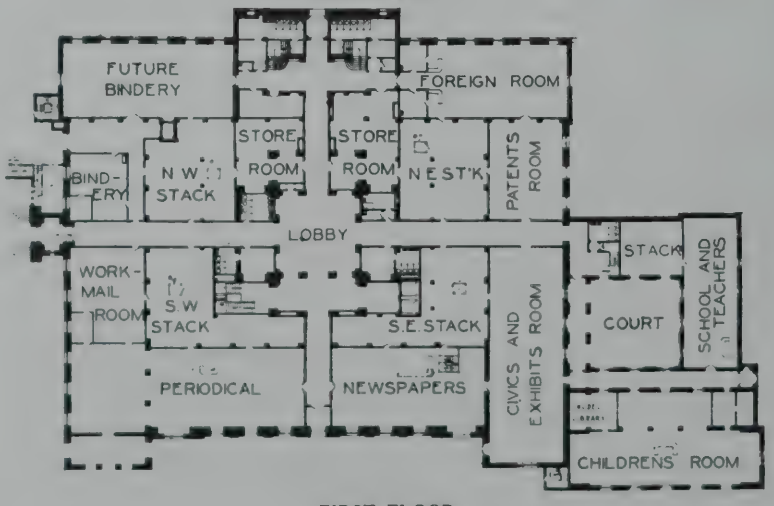


FIRST FLOOR

PLANS, LOS ANGELES PUBLIC LIBRARY

BERTRAM GROSVENOR GOODHUE, ARCHITECT; CARLETON MONROE WINSLOW, ASSOCIATED

ENTRANCE FRONT

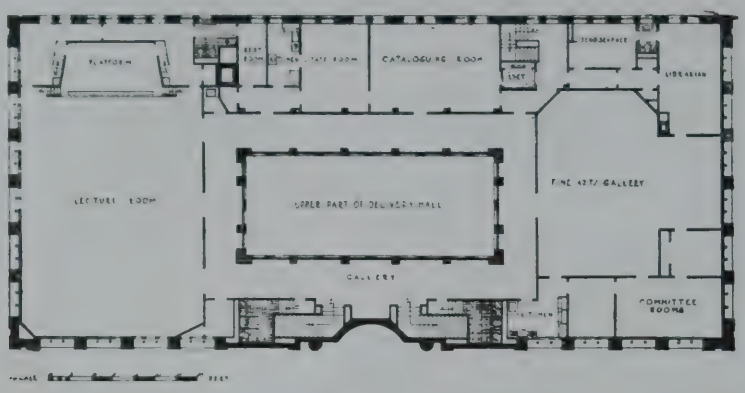
Photos. John Wallace Gillies

CHILDREN'S ROOM

Plans on Back

McGREGOR PUBLIC LIBRARY, HIGHLAND PARK, DETROIT

EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS



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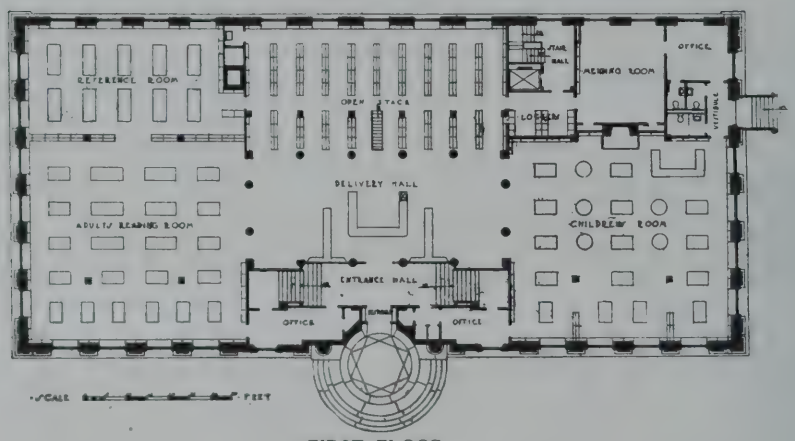

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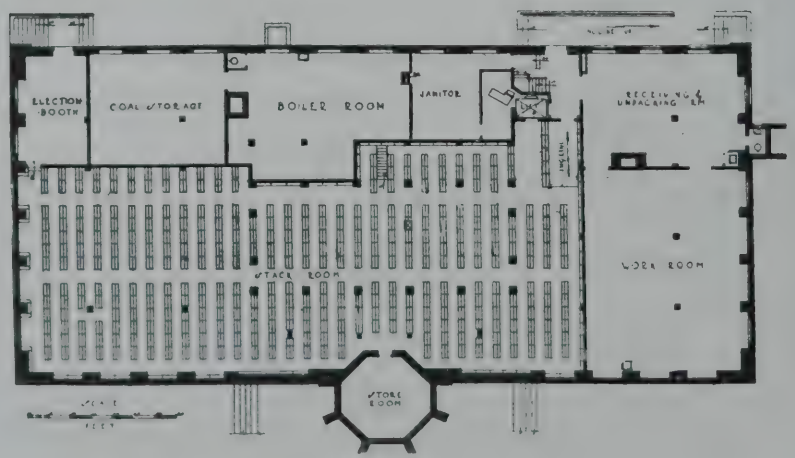


BASEMENT

PLANS, McGREGOR PUBLIC LIBRARY, HIGHLAND PARK, DETROIT

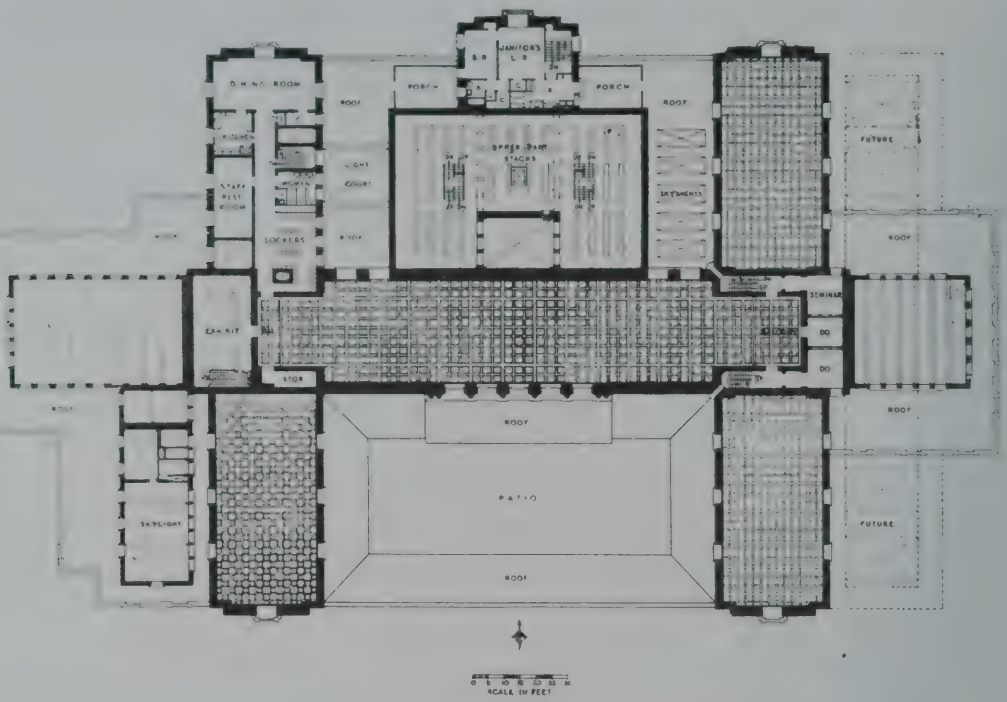
EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS

ENTRANCE FRONT

Photos, William Clark *Plans by Gack*

PASADENA PUBLIC LIBRARY

MYRON HUNT AND H. C. CHAMBERS, ARCHITECTS



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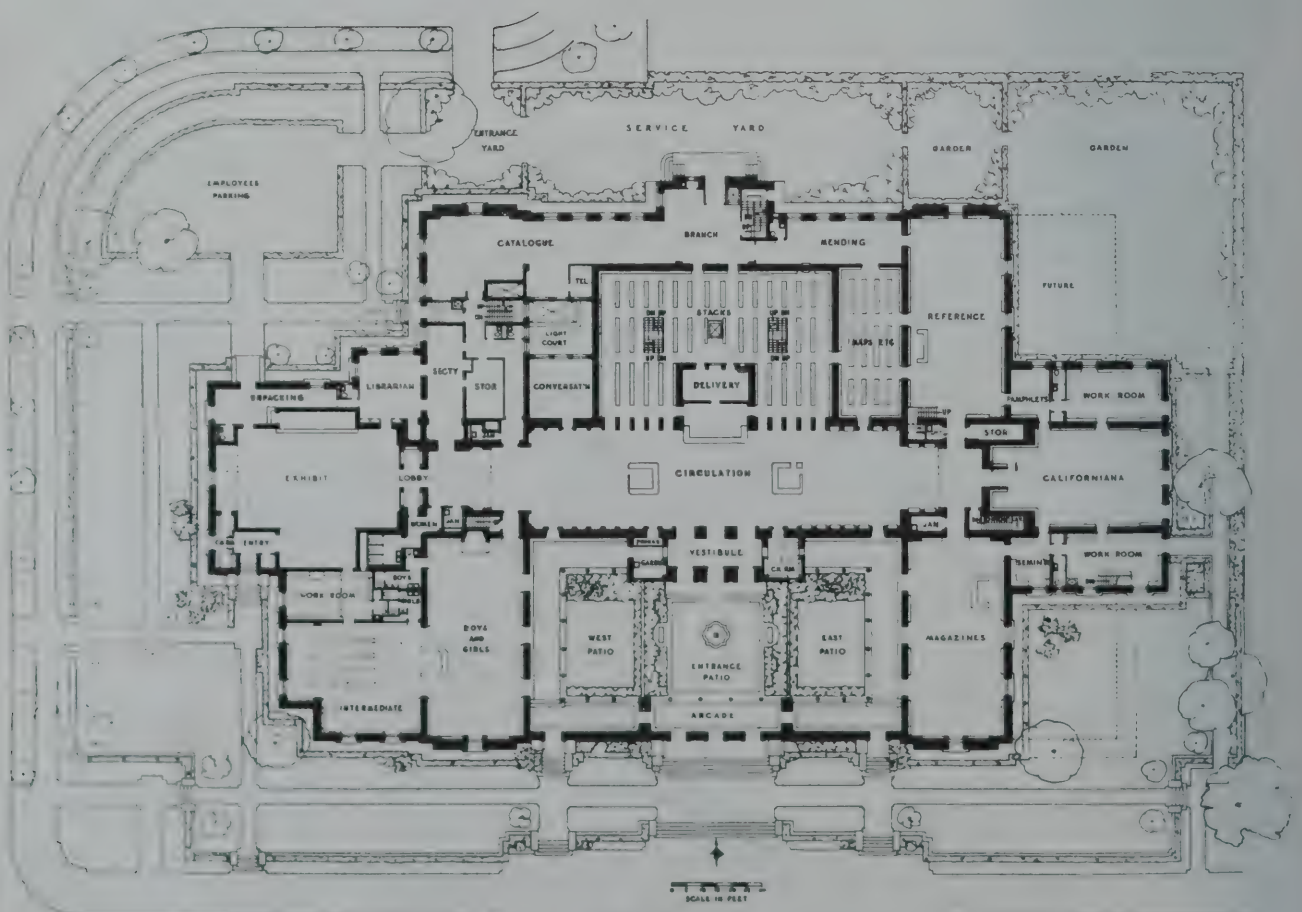

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PLANS, PASADENA PUBLIC LIBRARY

MYRON HUNT AND H. C. CHAMBERS, ARCHITECTS

AN ENTRANCE

Photos. Shirley Vance Martin *Plans on Back*

HENRY E. HUNTINGTON LIBRARY, SAN MARINO, CAL.

MYRON HUNT, ARCHITECT

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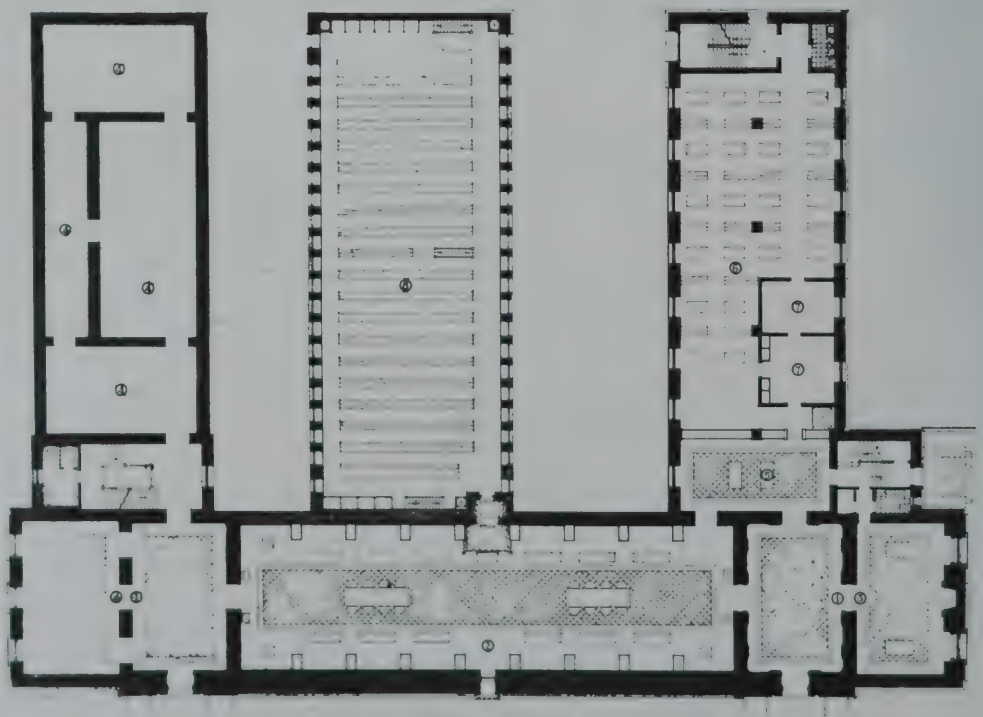

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PLANS, HENRY E. HUNTINGTON LIBRARY, SAN MARINO, CAL.

MYRON HUNT, ARCHITECT

Photo, Photo-Illustrators

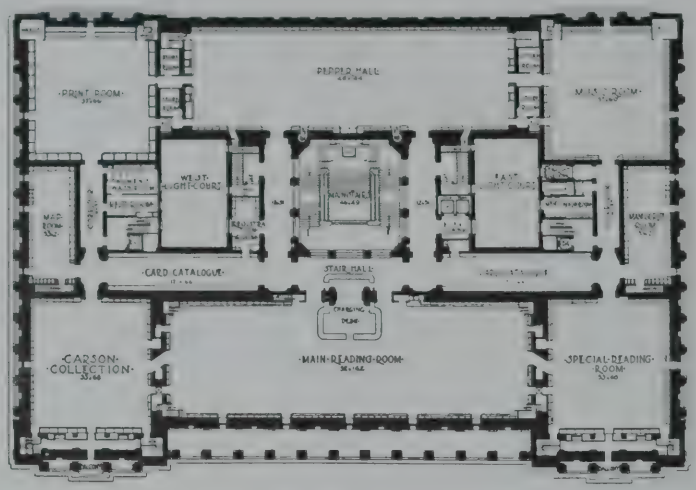
ENTRANCE FRONT

Plans on Back

MAIN READING ROOM

PHILADELPHIA PUBLIC LIBRARY

HORACE TRUMBAUER, ARCHITECT



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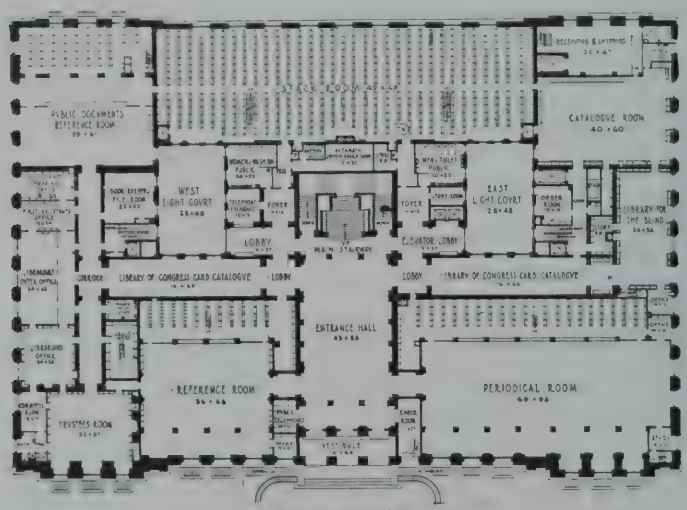

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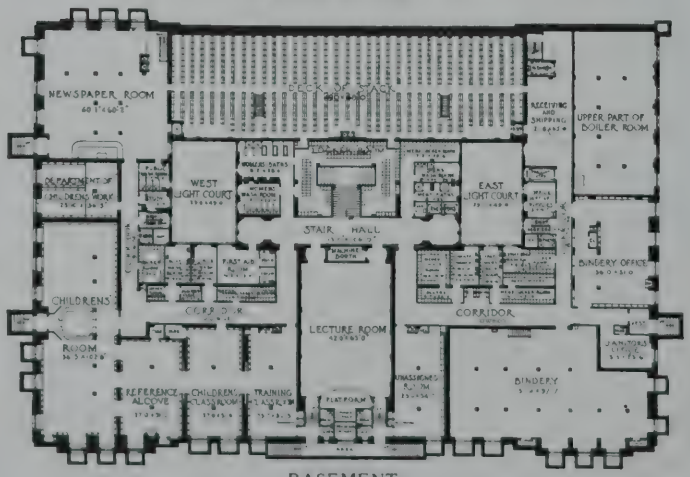


BASEMENT

PLANS, PHILADELPHIA PUBLIC LIBRARY

HORACE TRUMBAUER, ARCHITECT

NORTH FACADE

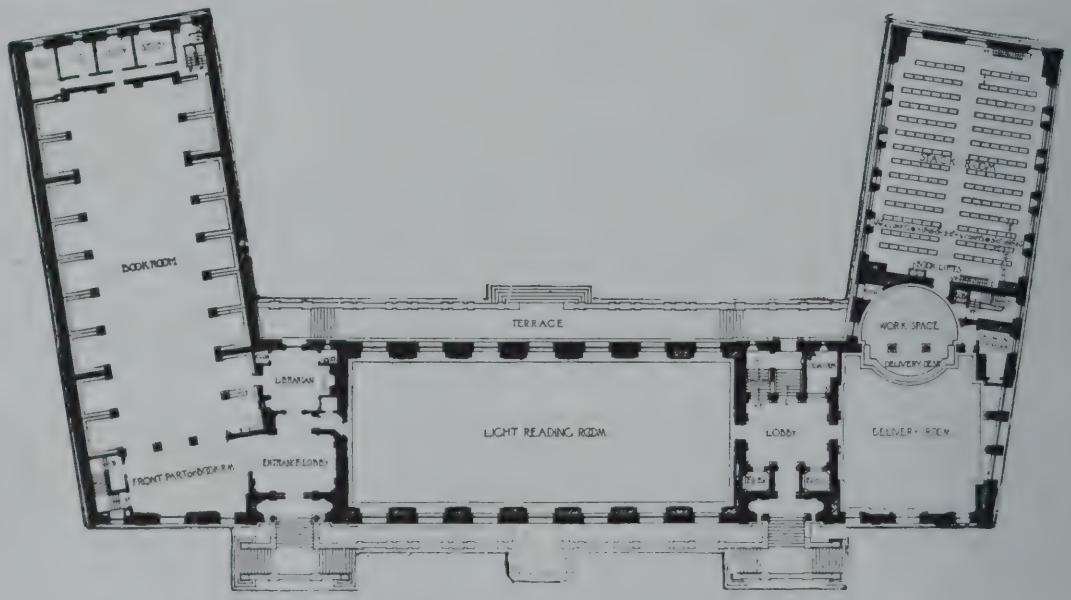
Photos, Kenneth Clark

Plan on Back

MAIN READING ROOM

J. J. HILL REFERENCE LIBRARY AND ST. PAUL PUBLIC LIBRARY

ELECTUS D. LITCHFIELD, ARCHITECT



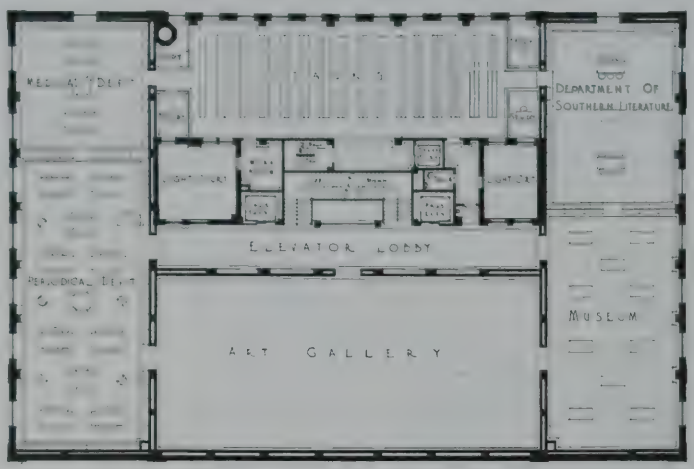
PLAN, J. J. HILL REFERENCE LIBRARY AND ST. PAUL PUBLIC LIBRARY

ELECTUS D. LITCHFIELD, ARCHITECT

Photos, Tebbs & Knell, Inc. *Plans on Back*

PUBLIC LIBRARY, BIRMINGHAM, ALA.

MILLER & MARTIN, ARCHITECTS



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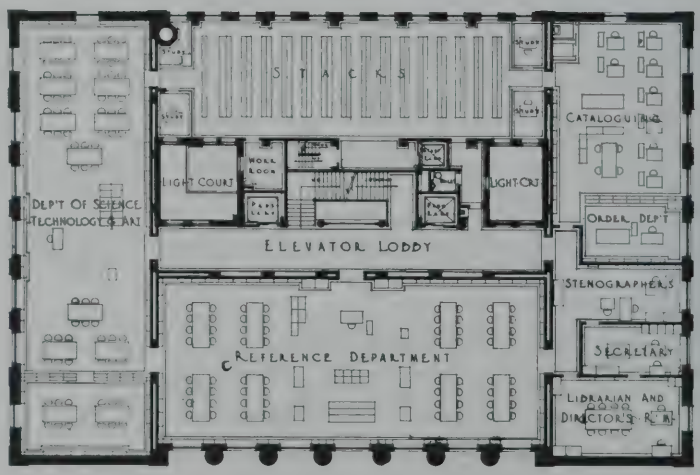

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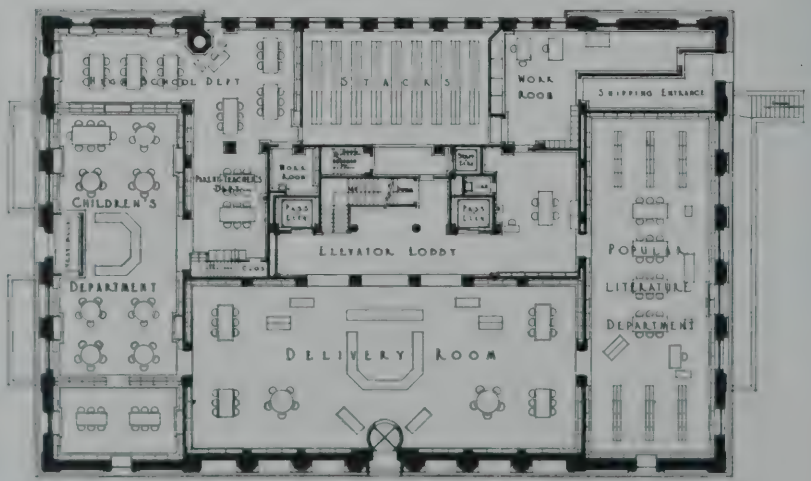


FIRST FLOOR

PLANS, PUBLIC LIBRARY, BIRMINGHAM, ALA.

MILLER & MARTIN, ARCHITECTS

Photo. Brenza

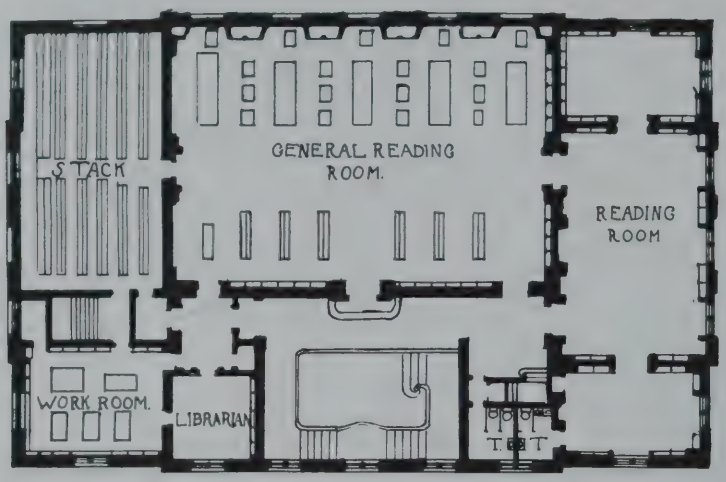
EXTERIOR

Plans on Back

READING ROOM

CLEVELAND MEDICAL LIBRARY

WALKER & WEEKS, ARCHITECTS



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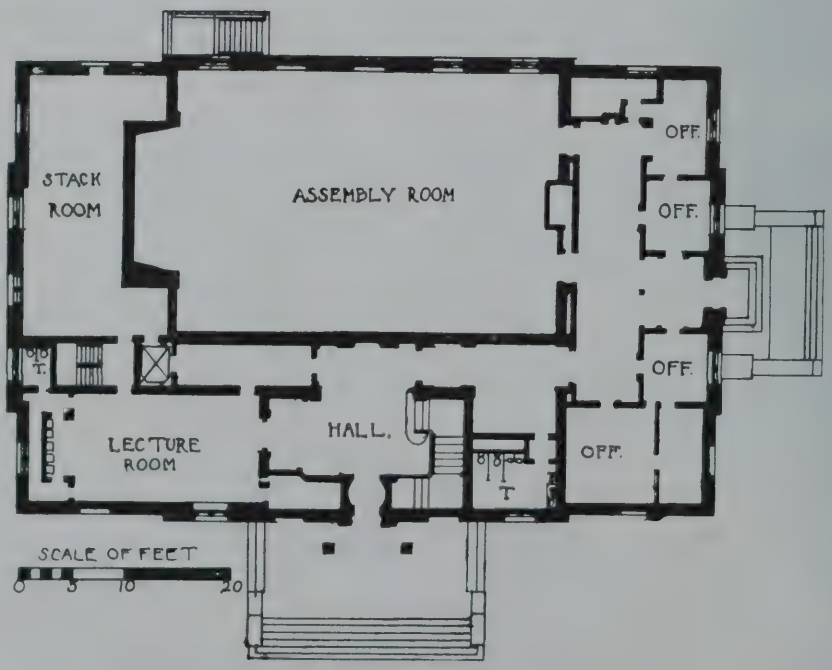

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PLANS, CLEVELAND MEDICAL LIBRARY

WALKER & WEEKS, ARCHITECTS

Ventilating and Lighting Library Buildings

By SAMUEL H. RANCK

Chairman, Committee on Ventilation and Lighting, American Library Association

LIBRARY buildings as a rule are open and in service long hours, frequently in our large cities 80 or more hours a week every week of the year, and on seven days of the week. During the scholastic year some of our university libraries are open even longer hours than public libraries. Churches, theaters, schools and other public places are rarely open half as many hours; many of them less than one-tenth as many as the library in the course of a year. These long hours with a variable load at different hours of the day and in different rooms at the same hour make the problem of library ventilation particularly difficult. The number of persons in the rooms to be ventilated might be termed the "ventilation load," and a variable load is always much more difficult to handle than a constant load. A special reading room, that is a room for a special class of readers, such as a medical reading room or a reading room for teachers, illustrates what is meant by a variable load. Such a room may have only one or two readers, or none for many hours of the day, whereas during the winter months, a newspaper or magazine room may be crowded to the limit all day long. The amount of air required for good ventilation in one room may be many times that in another.

Certain of our large city libraries have an additional problem in the winter months, particularly in newspaper reading rooms, which are frequented largely by unemployed persons who come from cheap lodging houses. Some of these people seem to go without a change of clothing for a whole season. This is also a problem in some children's rooms, where it is not unknown to librarians that certain children have their clothing sewed on in the fall, with no change until spring. Such persons bring to the library the problem of dealing with human odors. Besides the reading rooms and ordinary public rooms of the library, we have in many of our library buildings lecture rooms or auditoriums. A lecture room filled to capacity usually seats from three to four times as many persons as the same floor space when used as a reading room. This causes wholly different problems of ventilation in two rooms otherwise identical, and this difference must be duly considered.

In the main building of the Grand Rapids Public Library, we have a very good illustration of this, the reference room and the lecture room being on the same floor and identical in size. An audience that fills the lecture room will ordinarily raise the temperature at least 10 degrees in the course of an hour when it is freezing outside. The building is heated and ventilated by a plenum system, so that if the lecture room is comfortable the other rooms are entirely too cold. If, on the other hand, the other rooms are comfortable, the lecture room is hot and "stuffy." People have difficulty in keeping awake, and everybody feels and knows that the ventilation is bad. We have remedied this somewhat by shutting off the plenum fan for the lecture room for several hours before a lecture begins and by opening the windows wide, thus chilling the room and walls down to nearly 60°. The fan, forcing air that will keep the rest of the building comfortable, takes on the load of the lecture room half an hour before the lecture begins. Conditions of this sort make it absolutely necessary, in planning a library building, that the heating should be independent of the ventilating system. Furthermore, in a large library building it is most important that the ventilation be controlled in every room at every hour of the day, in accordance with the conditions in each room. This means fans, for it is impossible to control the ventilation of a large library building without use of a system of fans.

Ventilation is primarily a physiological problem, for the comfort or discomfort of persons in a room, because of air conditions, is a physiological condition. Heat, humidity, odors, lack of motion in the air all affect the action of the bodily organs, causing comfort or discomfort as the case may be, thus greatly affecting the amount and quality of their work, and ultimately bad conditions will injure the health of persons long exposed to them. When the reaction produces comfort, we say the ventilation is good; if discomfort, bad. And psychology plays an important part in one's reactions to such conditions. Thirty-five years' experience in operating public library buildings and studying library buildings generally, has convinced me that psychology is a very important factor in successful ventilation. Different persons are affected differently by the same conditions. The heart beats of some people are much faster than those of others; for example, mine is about 20 beats per minute slower than my wife's. Usually persons with high pulse beats require very much less heat for comfort than persons with slow pulses. This is largely regulated by their clothing. However, if a person feels hot and uncomfortable, and sees the windows all closed and no evidence of air coming into the room, the psychological effect is bad; whereas if windows are partly open or ribbons or something colorful are placed at the vents through which the air comes into the room indicating air in vigorous motion, the psychological effect is good. In short, the whole problem of ventilation is essentially a "human" problem. It is a problem of ventilating people rather than ventilating buildings; and we know that people are more or less temperamental. For this reason one can never depend wholly on automatic mechanical devices,—thermostats, etc.,—to give entirely satisfactory results. Good horse sense

with an understanding of the whole problem must be used,—with some dependence placed upon diplomacy!

The public rooms of most library buildings are ordinarily too warm. People come into the building with their wraps on, while the women employes in the building, dressed in the present style, often have little clothing below the knees, with arms bare to the elbows or shoulders. How can we get satisfactory conditions for both these groups? When the building is too warm it affects the action of the skin and the heart of the individual, unless the air is in motion, and furthermore, in raising the temperature from 66 to 72 in a crowded room containing a considerable number of the unwashed, odors become very strong. The higher the temperature above 70 the greater the problem presented by odors from human bodies. Hence, keeping the temperature down reduces this very materially and improves the ventilation,—important, since many object to fresh air.

Securing good library ventilation, therefore, presents a problem of proper control so as to give the greatest amount of satisfaction possible under the varying conditions that exist in different parts of the building at different hours of the day, and to two groups,—the workers and the general public. It may be added with reference to the unwashed that as a rule they are very much opposed to any evidence of fresh air in a room, and my experience in public library buildings is that there is a great deal more criticism from this group about too much fresh air than from those who feel that there is not enough. When there is added to the unwashed the presence of a number of persons whose favorite dish is garlic, one can imagine the difficulty of the whole problem! The physiologists and the medical profession have not yet definitely agreed upon what is "optimum" ventilation, and what ventilation really does in a physiological way. The engineering profession could greatly improve conditions if once it were really known what is the best thing to do. Most ventilating systems have been unsatisfactory because they are based on the wrong theory of what ventilation must really accomplish to be satisfactory.

Most of the ventilating apparatus in library buildings, and in public buildings generally, until within recent years, was based on the carbon dioxide theory,—namely, that human beings in breathing give off a certain percentage of carbon dioxide which poisons the air. The functions of ventilation machinery according to this theory are to supply fresh air from the outside to dilute the polluted air in the building and to remove the vitiated air, so as to keep

Photo, Mott Studio

Sociology Room, Los Angeles Public Library
Bertram Grosvenor Goodhue; Carleton Monroe Winslow, Associated

the carbon dioxide content of the air of a building as nearly as possible equal to that of good fresh air from the outside. It is this theory that is responsible for the laws in many of our states requiring 30 cubic feet of air per minute delivered into certain public rooms for each person in such rooms. This theory has been exploded by a number of studies and investigations, a description of which it is not possible to go into here. It is interesting on its own account.

As already indicated, the primary problem of ventilation is that of controlling the conditions of temperature, humidity, odors, and motion of the air so that the human body, especially the heart, the lungs and the skin, will function to the best advantage for health and efficiency. To bring this about with any kind of machinery requires constant observation and intelligence on the part of someone in every library building. In all too many of our libraries the ventilation service is a failure on account of improper operation on the part of the janitor or engineer in charge. Such machinery in its operation should be made as simple and as nearly foolproof as possible. Every room in a library building should be equipped with an ordinary good thermometer, and there should be in the building in one or two places a hygrometer which in winter months should never be allowed to register much below 50°. A self-registering thermometer properly placed is also a good investment to check up on the work of the heating plant every minute of the 24 hours. In a large library building an anemometer should also be available to test occasionally the amount of air being delivered to the various rooms, so as to be sure that everything is functioning properly. Where there is a high degree of human intelligence used in looking after these things, even with relatively poor machinery or apparatus, excellent results may be achieved; whereas the most expensive and up-to-date apparatus may prove a failure because of lack of intelligent operation. In our main library building in Grand Rapids last winter we got better results than ever before by having the fireman in cold weather go through the building every hour during the busy part of the day, reading the thermometers and observing the conditions in every room. If one room went below or above par, he took steps to remedy such a condition, restoring it to normal.

Good ventilation means maintaining indoors a supply of air which causes the body to function as nearly as possible as it does in approximately pure air out of doors. To achieve this result in a library building, or any large structure for that matter, ventila-

Photo. Baker

West Side Branch, Grand Rapids Public Library
Robinson & Campau, Architects

Photo. Paul J. Weber

Reading Room, Beebe Memorial Library, Wakefield, Mass.
Cram & Ferguson, Architects

tion must be subject to control so as to meet the varying conditions or needs of the situation. And all this means machinery properly laid out and installed. Proper control also greatly reduces the cost of operation, for then there will not be tons of fuel wasted by heating air and forcing it through the building when it is not needed or used. Small library buildings, especially in neighborhoods that are not congested, may get good results from intelligently operated natural ventilation. But where there are large crowds in small buildings at certain hours of the day, natural ventilation will fail to give satisfaction, especially when the air outside is stagnant. Small electric fans, such as are in common use in hot weather, may then be used as an inexpensive solution of this problem, and sometimes with good results.

The problem of lighting library buildings is in some respects less difficult than that of ventilation. However, we must take certain facts into consideration, facts which I believe have not yet been sufficiently considered in the planning for the lighting of library buildings. The first of these is that with the development of the electric light we have trained our eyes to require a great deal more light than was satisfactory to the average user 25 or 30 years ago. There was a time when 4- or 5-foot candles on the reading plane (that is to say, an ordinary library table) were considered adequate lighting. Today 10-foot is very generally required, and some of the newer library buildings have as high as 14- or 15-, although they seem to me to be overlighted. I am convinced, however, that some eyes require a great deal more light than others. It is, therefore, necessary in a library building to provide different quantities of light to take care of the differences in the eyes of readers. There are libraries where this has already been done, with very interesting results, by delivering a greater number of foot candles to the tables at one end of the reading room than at the other. Thus needs of readers of many classes are met.

The problem of lighting is largely an engineering problem. If we know how much light is needed on the reading plane, it is a very easy matter to wire the building and to put in lamps, shades and reflectors to give that result. Every library, however, should have a foot candle meter to test the amount of light that is being delivered on the reading plane. The age of electric lamps and the accumulation of dust and dirt on them, on shades and on reflectors, greatly affect the amount of light delivered, sometimes by as much as 50 per cent. Laying out the lighting system so that it is relatively easy for the janitors to get to the lamps and reflectors for

frequent cleaning is a most important part of the work of the architect or lighting engineer. I am of the opinion that the psychological effect in a public reading room is very much better with semi-indirect light than with either direct or indirect lighting. I regard it as more satisfactory also in some other ways.

Natural light is, of course, to be preferred for reading rooms and work rooms, but when such rooms are open many hours of the day, artificial light must be largely used. In our cities very little can be done with the orientation of buildings so as to get into all the rooms the greatest amount of daylight possible, for so many of our streets are laid out according to the four main points of the compass. Orientation can frequently be worked out better on a college campus. For instance, a building facing one of the four main points of the compass will get less sunshine in all its rooms than if it were faced say southeast. Latitude and climate are also important factors in the ventilation and lighting of library buildings, but these cannot be gone into here.

Photo. Paul J. Weber

Reading Room, Williams College Library
Cram & Ferguson, Architects

Arrangement of stacks for the storage of books in the library should, I believe, depend entirely on artificial light. The windows in the average stack room of a library are wholly inadequate for lighting the center of the stacks, even on a bright and sunshiny day, so that artificial light must be used in any event. By eliminating the windows and the aisles that usually go along the walls, and by depending on artificial light and mechanical ventilation entirely, the capacity of the average stack room for book storage would be increased by approximately 20 per cent. The stack rooms are usually the most inefficiently lighted of any part of a library building. The light source is at the ceiling, and the farther a book is away from the lamp, say on a bottom shelf, the smaller the angle of light incidence, so that both distance and this angle increase the difficulty of reading the numbers or the lettering on the backs of the books, especially when the books are somewhat worn from use. For the smooth running of the library it is of the first importance that books may be found readily and placed back on the shelves in the same way. This means adequate lighting as the first requisite for this work. It can be greatly helped by having the floors of the stack rooms of white marble or tile, or even painted white, so as to reflect the light to the backs of books as they stand on the shelves. A number of libraries have done this in recent years, having the shelves, walls, floors, ceilings, and everything about the stacks in white. In the reading rooms the tables should be as free from lighting fixtures as possible. The colors of the walls

and of the furniture have an important bearing on the general effect on the reader. The satisfactory combining of mere utility and lighting efficiency with general artistic effect presents an interesting problem for the library authorities and the architects to work out. It is a problem well worth the necessary study.

It has long seemed to me that it should be possible for the stacks to be wired so that an employe who is putting books back on the shelves or is getting a number of books for patrons should be able to throw a light switch with the foot rather than by hand, for it is extremely awkward to attend to these switches when one has an armful of books. This would enable such a person to have the hands entirely free for books. The lighting system should be installed so that it is easy to cut out light in the stacks when it is not needed, thus greatly reducing the cost of building maintenance. Large library stacks can easily waste more light than the rest of the building uses. In both ventilation and lighting, the cost of operation is an important factor. It is a well known fact that many elaborate and costly systems of ventilation are not being operated as designed because of the costs. Take the case of a large library building with one fan system for the ventilation of every room in the structure; all the air to be outside air,—no recirculation; the building heated with the same fan system that ventilates it; air heated in zero weather to keep the rooms at about 70° Fahrenheit; half the rooms used very slightly many hours of the day; air delivered to them the same as to the rooms with many people in them;—all this results in most expensive operation and waste, for much cold air will be heated to a high temperature only to be forced out of the building without being of the slightest use to anyone. It is conditions such as these that lead engineers and janitors in charge of buildings to begin "monkeying with the machinery," and often on instruction from the boards of trustees!

Here are 14 points most to be remembered in designing ventilating and lighting systems for library buildings, all very well worth considering:

1. Supply the fresh, invigorating air that most normal humans crave, without "cooking" the life out of it by heating it to a very high temperature, thus destroying its invigorating feeling of freshness.

2. Deliver air in the proper quantities, without waste through supplying much more than is needed in some rooms and at the same time not enough in other rooms, because of the variation in loads in the different rooms. This is a highly important detail.

3. Humidify the air for the sake of the people

Reference Room, St. Paul Public Library
Electus D. Litchfield, Architect

in the building and for the sake of the books, the humidity in the winter months to be about 50 per cent of saturation. An open steam jet in the fan room will produce fairly satisfactory results. Air washers not only humidify the air but they also free it from dirt. They are, however, expensive to operate and sometimes are troublesome in other respects.

4. Separate the heating system from the ventilation system,—use the "split" system. This makes possible the supplying of air in the quantity needed, and without heating it so as to destroy its freshness,—simply tempering it during cold weather.

5. Provide for easy, independent control from the room itself of the amount of air to be delivered into that particular room from the ventilating fan system.

6. In crowded rooms, especially rooms frequented by odoriferous persons, move the air in vertical rather than in horizontal or semi-horizontal lines. This will not cause the spread of odors across the room to the annoyance of persons along the way.

7. Provide for natural ventilation,—windows,—as much as possible when there are only a few people in the room, reducing the cost of operation of ventilation system. Use of windows is often sufficient.

8. Provide, especially in a crowded room such as a filled lecture hall, for sufficient motion in the air (without at the same time causing drafts) so that people have the sense of freshness in the air they breathe. This will keep them more alert and awake so that they will be able to get more or do more from their presence in such air. Such air ventilates the body and gives a sense of satisfaction akin to that which we feel when outdoors in a refreshing breeze.

9. In cities take the air for the fans from the roof of the building rather than from the street level, thus avoiding pumping into the building much dirt and dust. Air filters may be used to keep out much dirt, but their burden ordinarily will be less when the air is taken from the roof. Many library buildings are settling basins for the dirt in the air that is pumped into them. Air from a roof level is much cleaner.

10. Plan the lighting system to deliver without glare 10-foot candles to the reading plane, with provisions for more light for persons whose eyes require it. Use stronger lighting at one part of a room.

11. Plan a color scheme for the walls, windows, and draperies to give an artistic effect. It will attract readers and be more restful to all who use the room. Red is not a restful color to have in such a room, but there are other colors which possess just that quality.

12. Give special attention to the lighting of the book stacks. Here utility should be the first and

Photo, Elliott Studio

Main Reading Room, Elmira College
Coolidge, Shepley, Bulfinch & Abbott, Architects

last consideration. It is of the highest importance.

13. Have all lighting fixtures, switches, apparatus, etc., easy of access to both janitors and workmen. Electric fixtures that can be cleaned or adjusted only from the top of a 20-foot ladder which does not reach the ceiling will not get the attention they need.

14. Architects, librarians, and library boards should always keep uppermost in mind that the function of a library building is to serve human needs, and that it must be operated by average human beings. We must, therefore, adapt to the fullest extent possible, ventilation, lighting and everything else about a library building to human beings rather than expect human beings always to adjust themselves to the building. When all this has been accomplished, we shall have "humanized" our libraries.

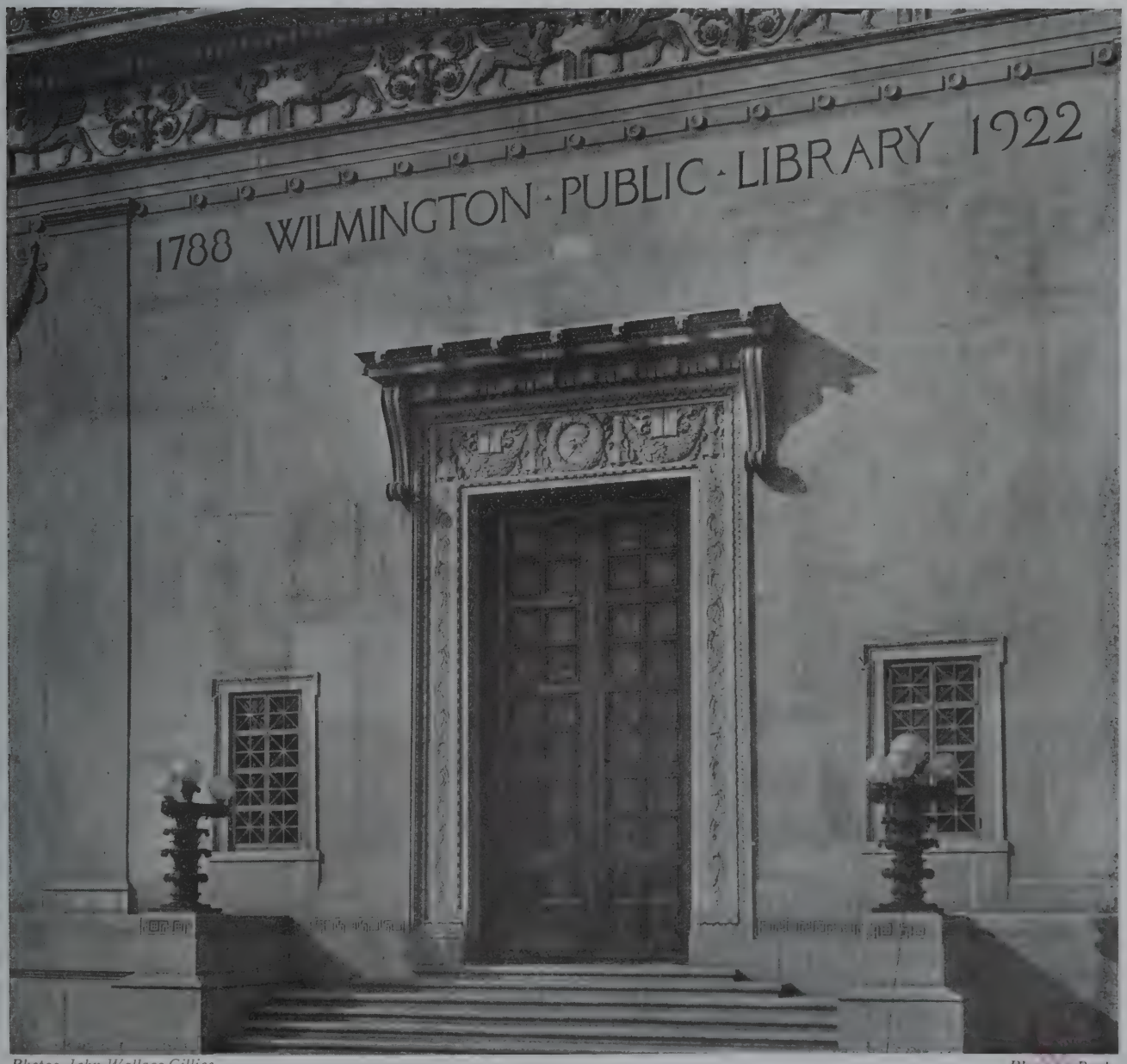
The 14 points here given cover the considerations of the ventilation and lighting more from the point of view of the readers and staff than from that of the technician. The human side is thus stressed in the hope that it may lead architects to bring this aspect of the problem to the attention of their consultant experts in either field so that each room will be considered as a special case, the comfort of the readers being the paramount objective. The scientific and technical attitude may need to be tempered with the human touch, and the cold factors of "cubic feet per minute" and "footcandles" should always be accompanied in the mind of the designer with the thought of the probable actual comfort of those who will use the building. Those who operate and control the ventilation and heating systems are not always as expert as could be wished, and it is therefore wise to consider them and to make their controls simple.

Photo, Richard Southall Grant

Library, Westfield, Mass.

Coolidge & Carlson, Architects; M. B. Harding, Associated

ENTRANCE FRONT

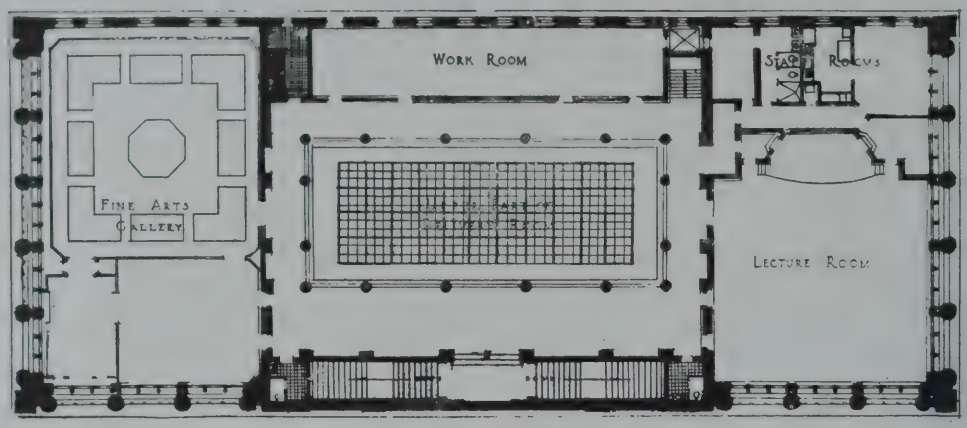


Photos. John Wallace Gillies *Plans on Back*

ENTRANCE DETAIL

PUBLIC LIBRARY, WILMINGTON, DEL.

EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS



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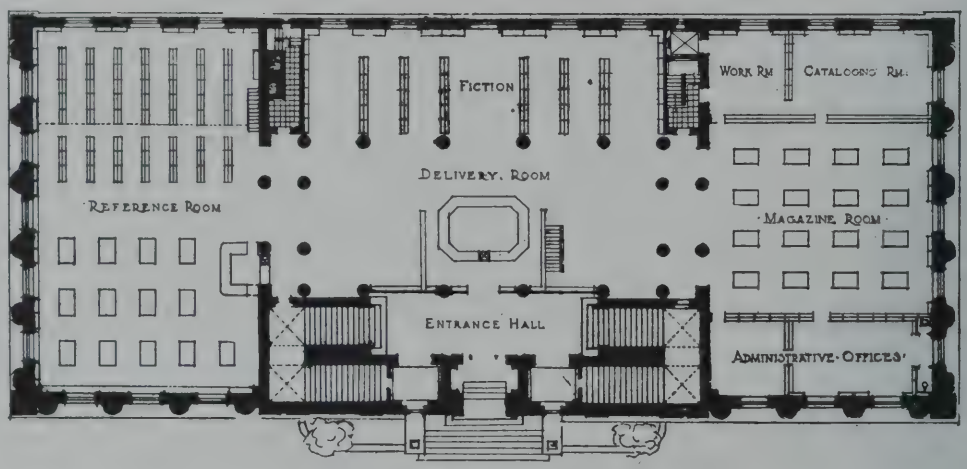

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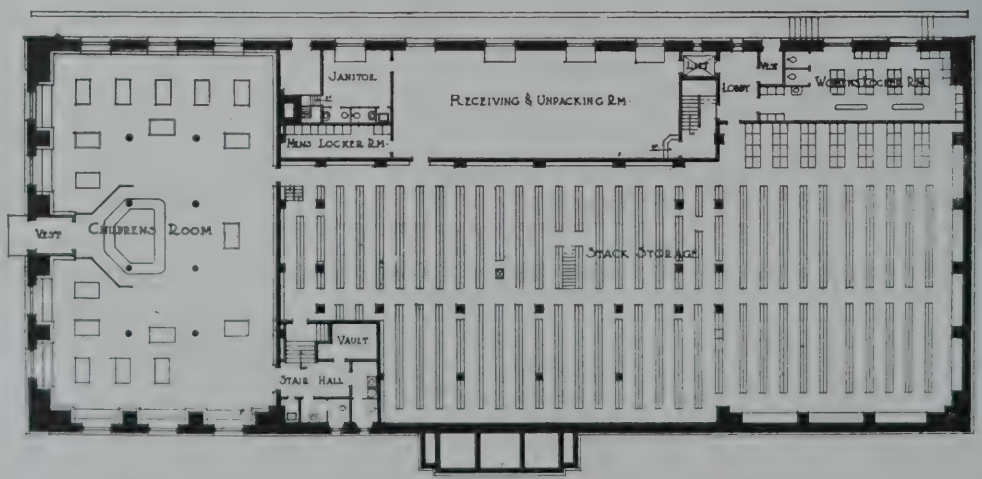


BASEMENT

PLANS, PUBLIC LIBRARY, WILMINGTON, DEL.

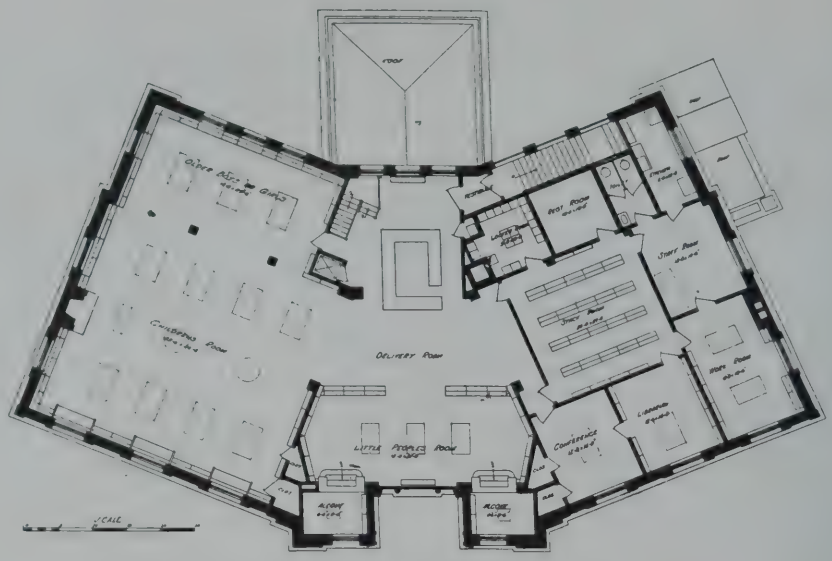
EDWARD L. TILTON, ALFRED M. GITHENS, ASSOCIATED, ARCHITECTS

ENTRANCE FRONT

READING ROOM

MT. PLEASANT BRANCH LIBRARY, WASHINGTON

EDWARD L. TILTON, ARCHITECT



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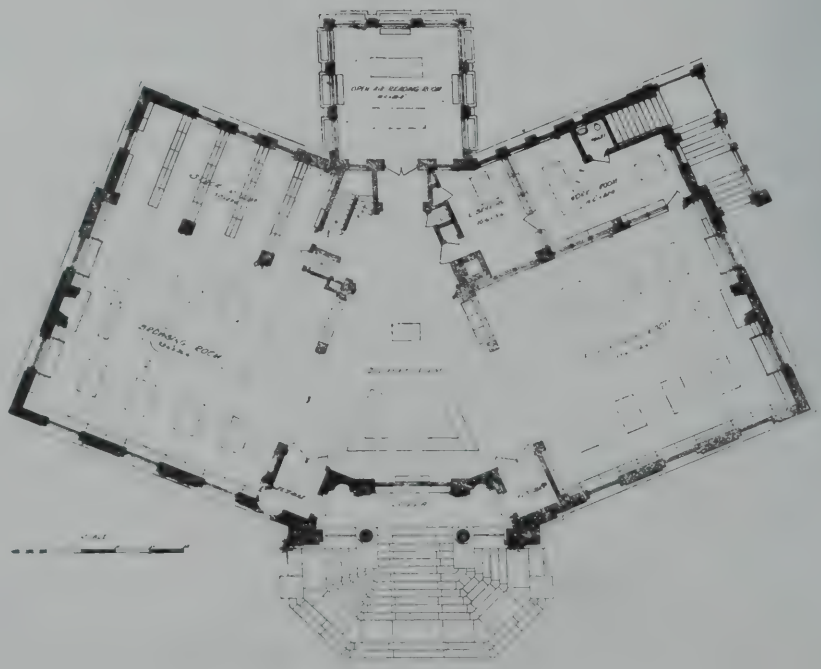


FIRST FLOOR

MT. PLEASANT BRANCH LIBRARY, WASHINGTON

EDWARD L. TILTON, ARCHITECT

ENTRANCE FRONT

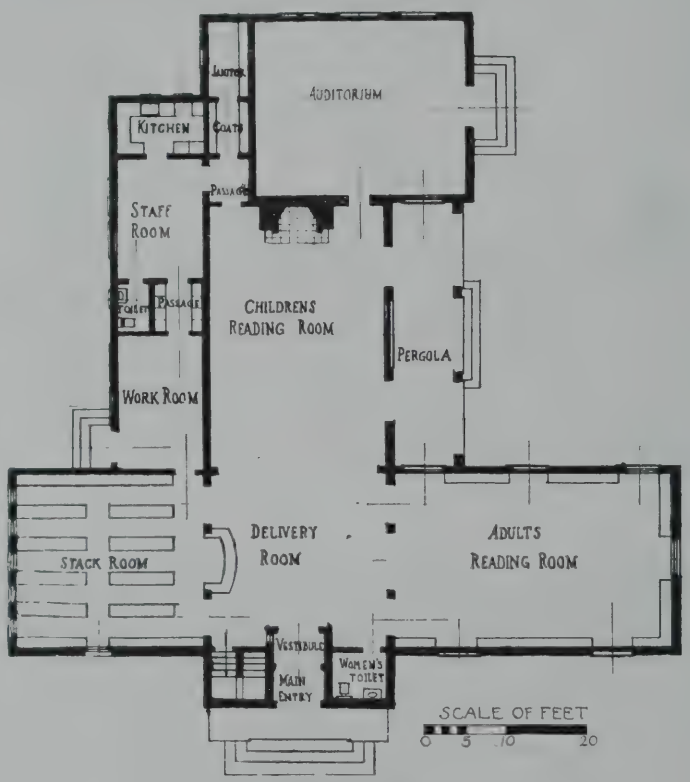
Photos, Miles Berne

Plans on Back

CHILDREN'S READING ROOM

WILMINGTON BRANCH LIBRARY, LOS ANGELES

MARSTON, VAN PELT & MAYBURY, ARCHITECTS



FIRST FLOOR

PLANS, WILMINGTON BRANCH LIBRARY, LOS ANGELES

MARSTON, VAN PELT & MAYBURY, ARCHITECTS

Photo. Dickson & Thurber

ENTRANCE FRONT

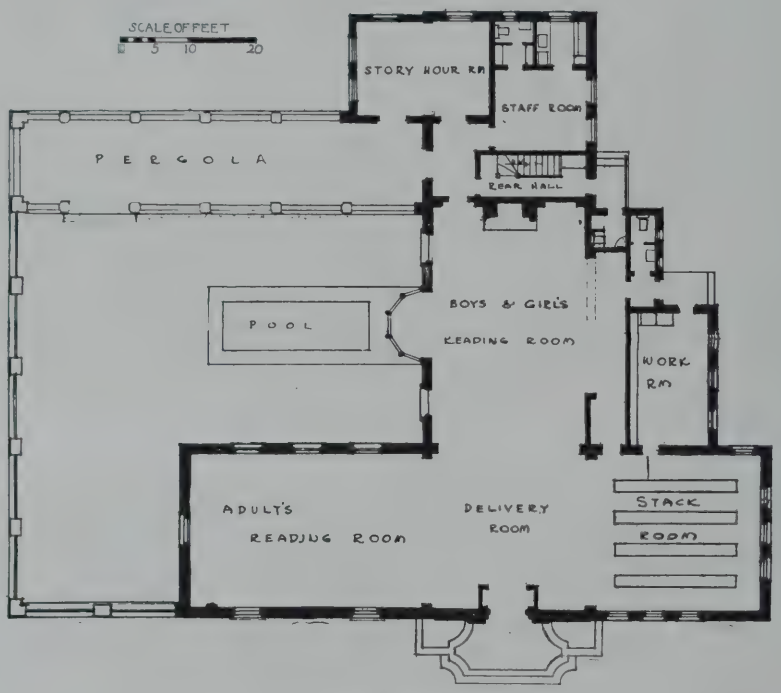
Photo. Paul Haight

Plan on Back

PATIO

HILL AVENUE BRANCH LIBRARY, PASADENA

MARSTON, VAN PELT & MAYBURY, ARCHITECTS



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PLAN, HILL AVENUE BRANCH LIBRARY, PASADENA

MARSTON, VAN PELT & MAYBURY, ARCHITECTS

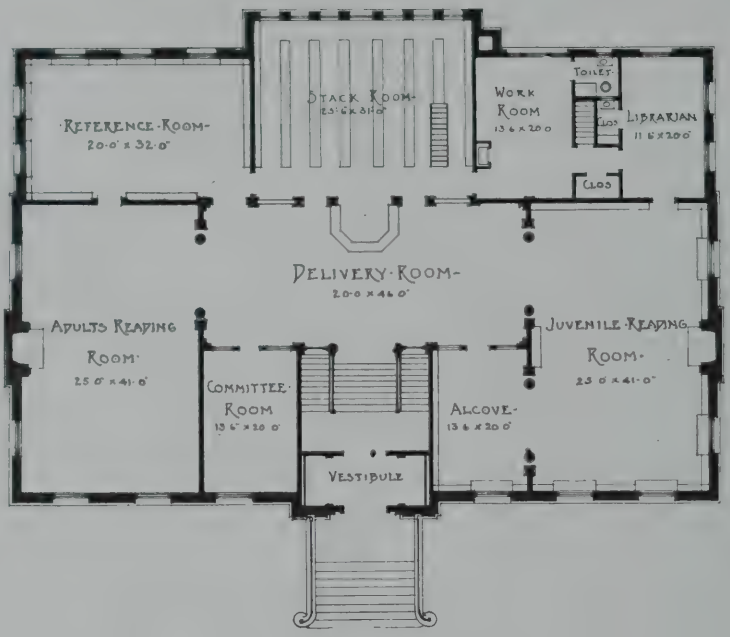
GENERAL VIEW

DELIVERY ROOM

Plans on Back

PUBLIC LIBRARY, LONGVIEW, WASH.

TORBITT, HOYT & HOYT, ARCHITECTS



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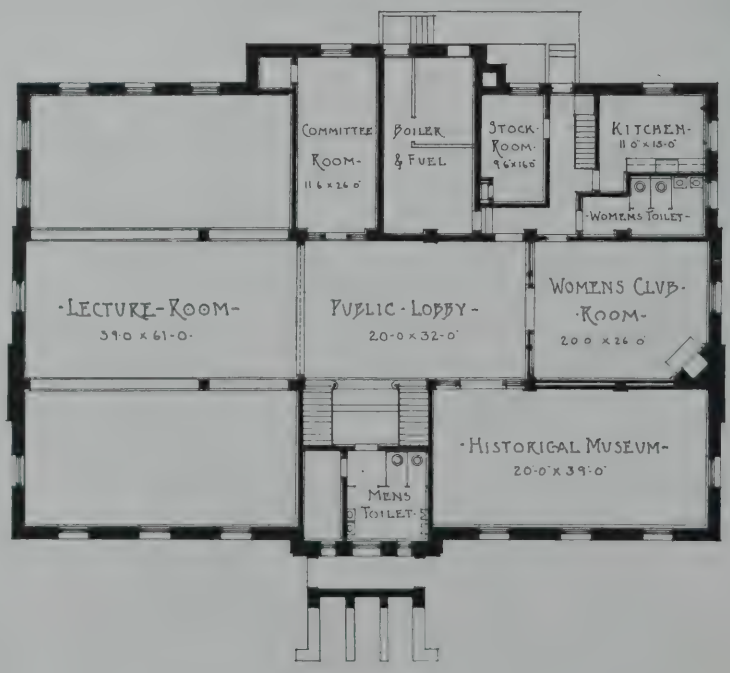


BASEMENT

PLANS, LONGVIEW PUBLIC LIBRARY, LONGVIEW, WASH.

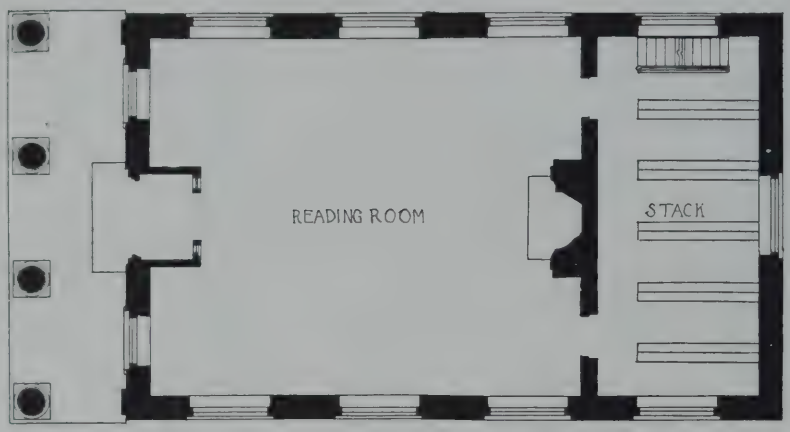
TORBITT, HOYT & HOYT, ARCHITECTS

Photos. Paul J. Weber *Plans on Back*

INTERIOR

LIBRARY, KIMBALL UNION ACADEMY, MERIDEN, N. H.

JENS FREDERICK LARSON, DESIGNER



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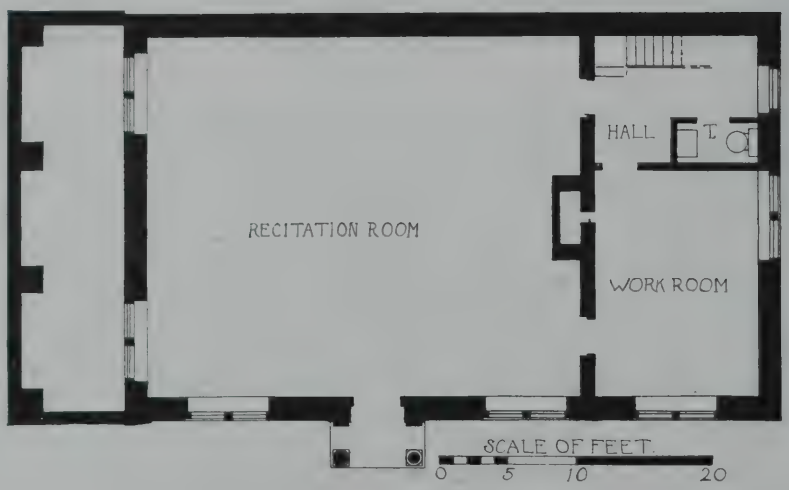


BASEMENT

PLANS, LIBRARY, KIMBALL UNION ACADEMY, MERIDEN, N. H.

JENS FREDERICK LARSON, DESIGNER

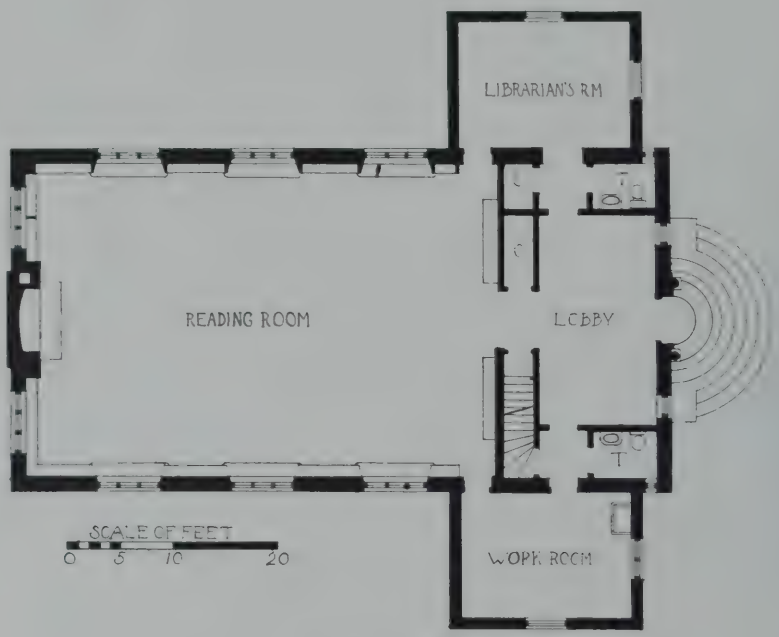
ENTRANCE FRONT

Photos, Tebbs & Knell, Inc. *Plan on Back*

READING ROOM

CHILDREN'S LIBRARY, WESTBURY, N. Y.

PEABODY, WILSON & BROWN, ARCHITECTS



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PLAN, CHILDREN'S LIBRARY, WESTBURY, N. Y.

PEABODY, WILSON & BROWN, ARCHITECTS

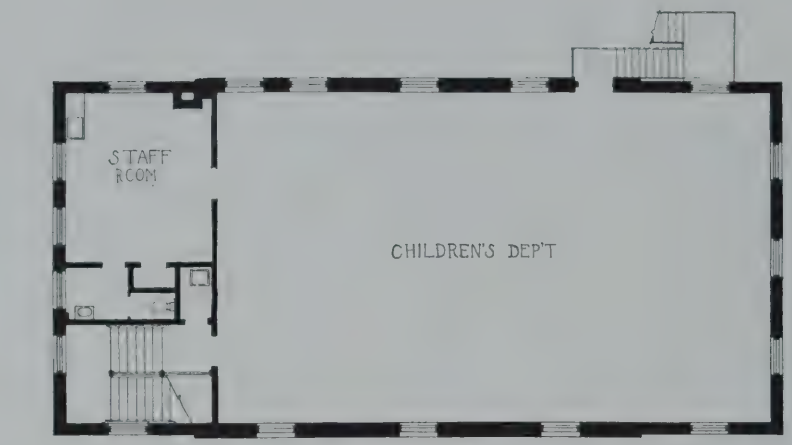
Photo. Burpo Co.

ENTRANCE FRONT

Plans on Back

VAILSBURG BRANCH LIBRARY, NEWARK

JOHN H. & WILSON C. ELY, ARCHITECTS



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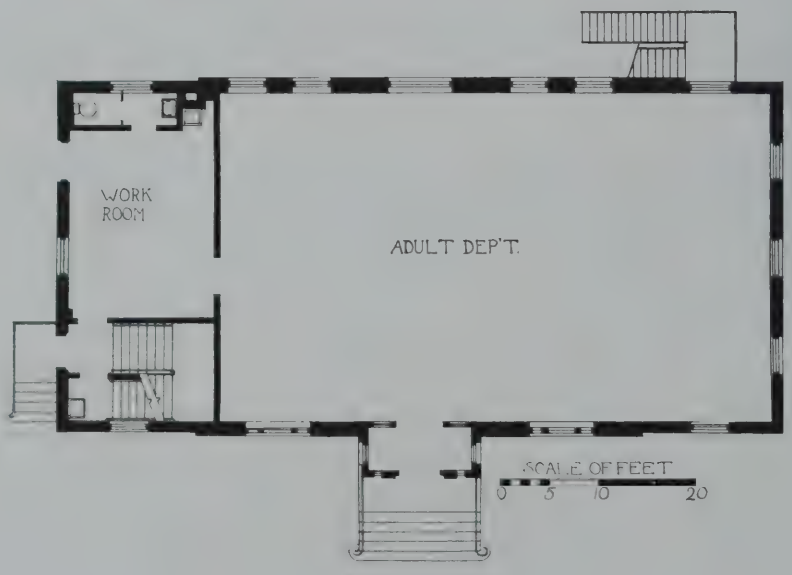

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PLANS, VAILSBURG BRANCH LIBRARY, NEWARK

JOHN H. & WILSON C. ELY, ARCHITECTS

Planning Art Museums

By LORIMER RICH

Of the Office of McKim, Mead & White

WE are accustomed to thinking of the three major arts as painting, sculpture and architecture, and we hear repeatedly of the necessity for collaboration between the painter, the sculptor and the architect. What greater opportunity can an architect have for the exercise of collaborative ability than in the designing of an art museum? Here he is confronted with the designing and erection of a building the very name and purpose of which constitute a challenge to his artistic genius, and the successful accomplishment of which is a permanent contribution to the cause of the arts. Here, in a building of appropriate design, he must create a proper and pleasing setting for painting, sculpture and examples of the numerous and varied minor arts.

Museum Functions. In attacking the problem of museum design, it is necessary first to obtain a thorough knowledge of the exact functions of the particular museum. These functions and activities vary considerably, and it is only in the larger museums that they all will be found. With the growing recognition of the desirability of cultivating the fine arts, we find the museums called upon to perform a multitude of services quite distinct from the original purpose of maintaining exhibition galleries for the public. There is an increasing demand from our industries for help in the designing of textiles, furniture, metalwork, ceramics and innumerable other objects. Study rooms, where careful notes and sketches of museum pieces may be made, are desirable, and this need must be satisfied. It is hard to dispense with a library of books, photographs and lantern slides. The lantern slides are usually circulated for lectures at schools and other institutions, and adequate provision for this work should be made. An auditorium in the building will be used for general art lectures and will also be used in conjunction with public school excursions to the museum. Considerable revenue may be derived from renting the auditorium for other purposes. For this reason, and because any meeting here might be at hours other than those during which the museum is open, it is well to place the auditorium so that it will have an independent entrance. It is not necessary that the auditorium have outside light, since practically all lectures given there will include stereopticon views or else require use of motion pictures.

General Plan. Broadly speaking, the basement or ground floor may be given over to the receiving and unpacking rooms; storage rooms, both for things in boxes and things unpacked; picture storage rooms; superintendent's office; heating and ventilating equipment; workshops; repair room; and toilets. These units might properly be on the ground or basement floor or on the main floor, depending somewhat upon the size of the building and the ideas of the executives:—director's office, trustees' room, business offices, photographers' rooms, the docents' office, etc.

The chief problem, which must be faced first in designing a museum, is the general arrangement of the important units. In other words, the *parti*. This, of course, refers directly to the manner in which it is intended that the public shall pass through the museum. The entrance vestibule, check rooms, information desk, retiring rooms and turnstiles do not vary much in requirements from those in many other public and semi-public buildings and will not be considered in detail here. A perusal of the bibliography of museum planning and a study of the more important museums built in recent years indicate three definite schemes of circulation. The museums, with few exceptions, have made use of these in various forms: (1) The Basilica Type; (2) The Gallery and Corridor Type; (3) The Continuous or "En Suite" Type. Each of them has its own particular merits.

The Basilica Type brings the visitor directly into a large, high room, usually treated with some degree of architectural importance. Doors on the sides of this room open directly into the individual galleries. The galleries are usually inter-communicating. This plan scheme is direct and pleasant and allows for an efficient grouping of galleries of kindred subjects or of contemporary periods. The lighting of the side galleries can be very well handled. In the case of a one-story building, high side lighting may be obtained in the large, connecting rooms. In case the building is of two stories, top light seems to be necessary, and as will be more fully explained later, the writer feels that top lighting has many disadvantages. The basilica type has been used in various units of the Metropolitan Museum,—in wings J, K and F, which are respectively for Greek and Roman sculpture, for the Pompeian court and modern sculpture gallery, and for the wings of decorative art (page 556). As will be noticed, the basilica type of plan is likely to lead to some waste in planning when expansion takes place, this being one of its demerits.

The Gallery and Corridor Type considers from the very beginning that a unit consists of a gallery and a corridor, instead of a gallery alone. This accessibility of each gallery to a corridor with the complete independence of each gallery from every other gallery has much to be said in its favor. When it is considered that a museum is a building to which the public comes to view various objects, one realizes how important it is that the approach directly to any particular room be kept clear. Often a class must be taken to a room, and possible confusion and annoyance may be spared adjoining galleries if it does not have to pass through them on its way to and

from its destination. With this type of plan it is also possible to close off easily any particular gallery for repairs or for re-arrangement. Where the corridors are adjacent to the galleries, the gallery sizes may be readily changed by moving partitions to suit some specific purpose without disrupting the general plan. The Freer Gallery in Washington is an example of this treatment (Plate 122). Here it will be noticed that, with the exception of two galleries, every gallery is entered directly from some corridor.

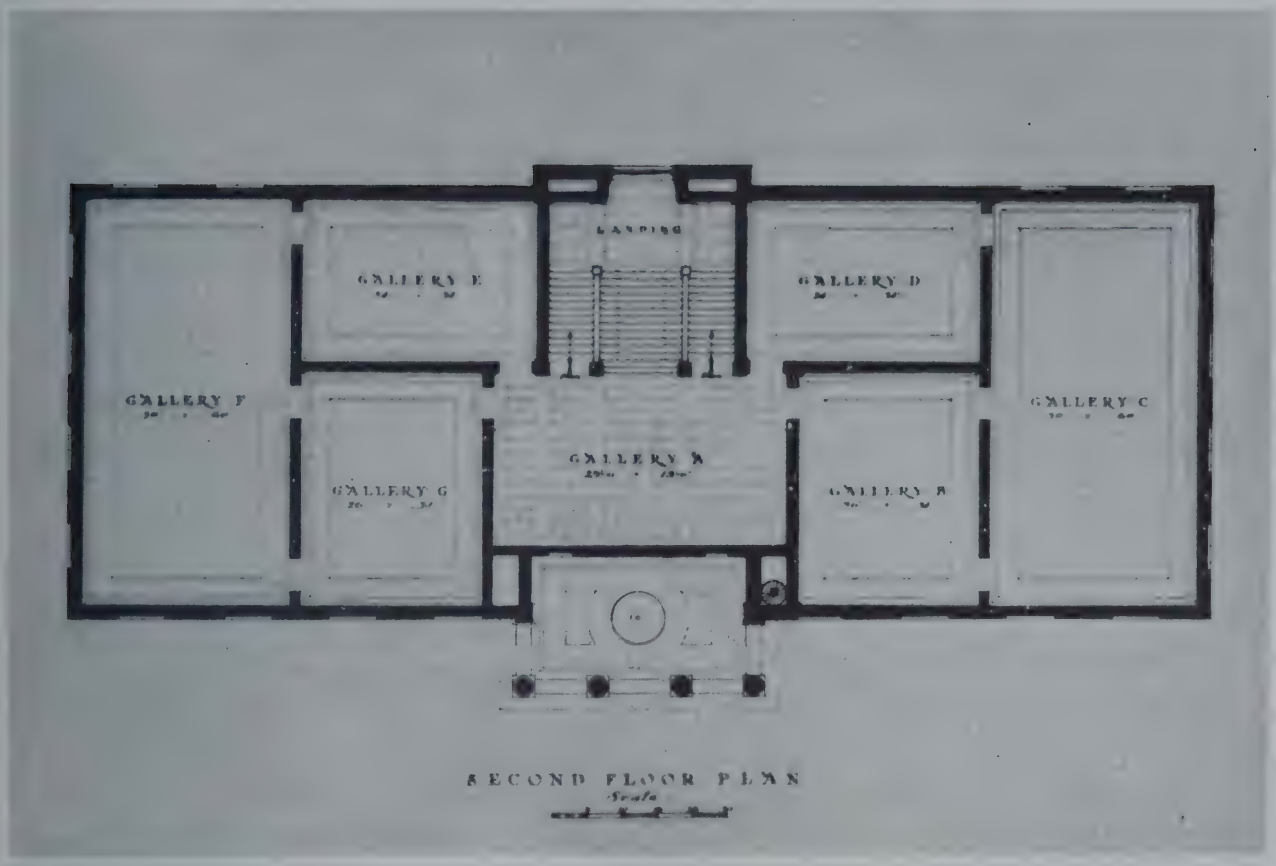
The Continuous Type plan, as its name indicates, refers to that plan which places one gallery next to another and forces the visitor to go through one or more galleries in order to reach any particular room. For a fairly small museum, such as the Cleveland Museum of Art or the museum proposed for Wilkes-Barre, this method undoubtedly works very well. Considerable space is saved, and there is practically no resultant loss of efficiency. In fact the very desirable "intimate" quality of the rooms is emphasized; but it must be remembered here that no great number of visitors is likely to come at once, and that there is no large percentage of strangers among them.

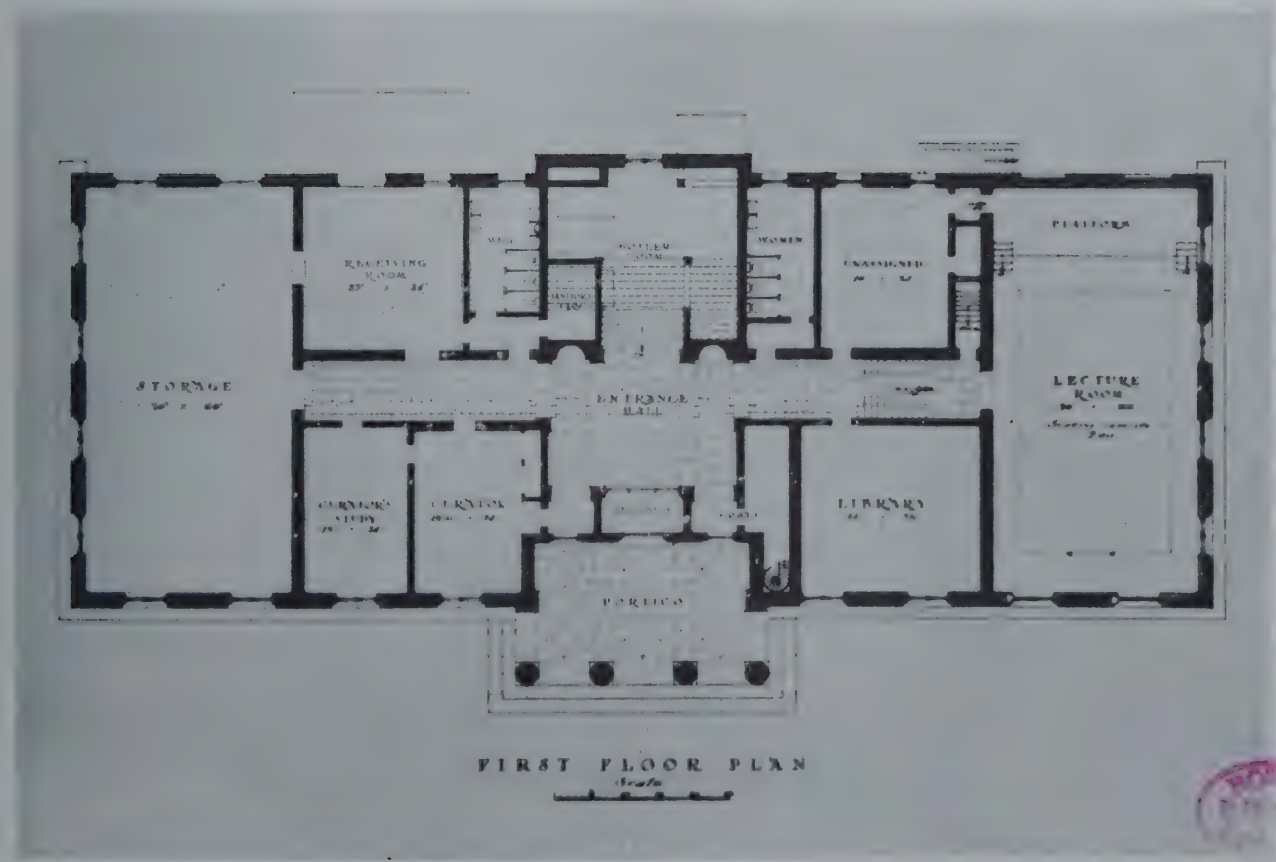
In general, the writer feels that this "en suite" type of plan is best adapted to the smaller museum for several reasons. No matter how cleverly the units may be worked out, there always seems to be a possibility of a more or less serious blocking of the circulation in case some one gallery is closed for any reason. For strangers particularly, it is confusing to find one's way about, and without corridors it is difficult to direct people to a particular gallery. Also, if a visitor comes to the museum for the definite purpose of studying any particular exhibit and must traverse several other exhibition rooms first, he too often lingers by the way and either never reaches his goal or finally arrives so satiated with the other exhibits that his zest for examining the object of his original quest is gone.

Lighting. The problem of lighting in a museum must be answered for three different subjects,—paintings, sculpture, and objects exhibited in cases. Ideal lighting for one might not be ideal for the others. The whole subject of the lighting of exhibition galleries is intricate and complicated, and a subject upon which there is no final agreement, even among those who have given much study to the question. Three methods of lighting generally used

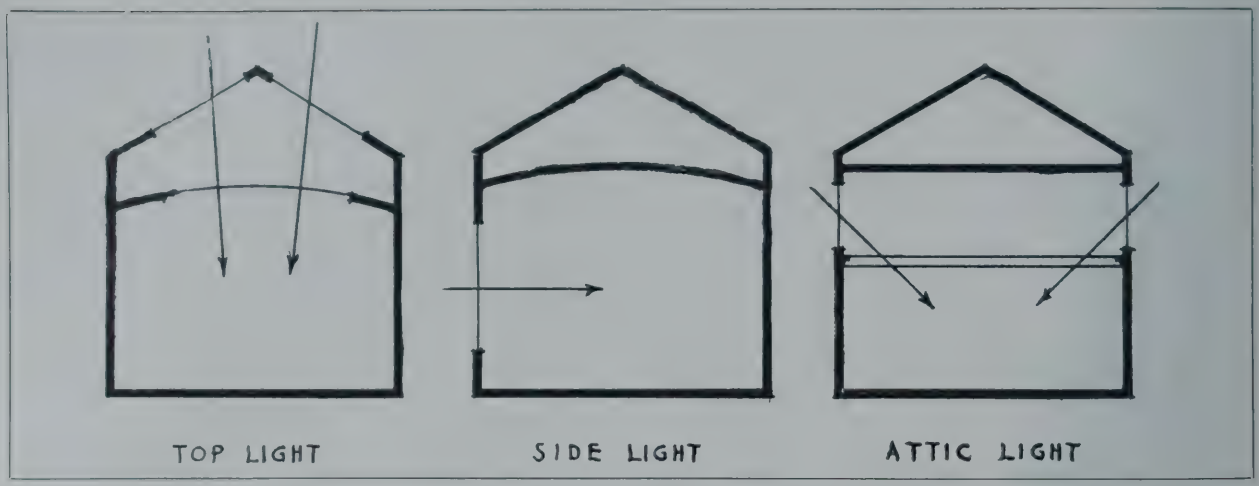
From Perspective by Scott Hastie

Proposed Art Museum, Wilkes-Barre
Charles A. Platt, Architect





PLANS, PROPOSED ART MUSEUM, WILKES-BARRE
CHARLES A. PLATT, ARCHITECT



The Three Usual Methods of Lighting

in galleries are top lighting, side lighting, and attic or clerestory lighting. These three terms may best be understood by referring to the accompanying diagrams, which illustrate use of each of the types.

The great variety of lighting schemes used and the various relations of light or glass area to the area to be lighted indicate either that there is a conflict of opinion as to what is good light or that we have not reached a clear understanding of the subject. Given ideal conditions of control and source, it is probable that painters and sculptors would disagree as to the correct lighting of a given subject. It does seem, however, that in general, museum rooms have too much light. The glass area is likely to be too great, covering in some instances the entire ceiling. The color and texture of walls

Pompeian Court, Metropolitan Museum of Art, New York
McKim, Mead & White, Architects

and floor also affect directly the impression of light in a room. Usually the floor should be dark in tone, and the walls should not be much lighter than the pictures to be exhibited. Walls and floors which are light in tone or of a glossy surface will reflect instead of absorb light, and they detract from the comfort of the room. So far as is practicable, it should be decided in advance what particular exhibits are to be placed in the respective rooms. It is only in this way that satisfactory results can be obtained, since the use of a room determines its plan.

The most general method of lighting picture galleries at present is by means of top light. Usually there is a ceiling sash, and above that is a skylight which admits the light to the ceiling sash. Top light does allow for a maximum hanging capacity. If the ceiling light is carefully designed and equipped to control the light at all times of day, pictures can be very well lighted, and unpleasant reflections practically avoided. There does seem, however, to be unanimity of opinion that top-lighted rooms are more or less unpleasant and gloomy. Top light is not natural in a room supposedly composed of four walls and a ceiling. There is apparent an indescribable lack of cheerfulness which is somewhat deadening. The ceiling light, to be most efficient, must be at least 14 or 16 feet above the floor. This in itself makes the room high, and with only one row of pictures hung, it leaves much blank space above, which only tends to add to the mausoleum-like character of the top-lighted room. It should further be borne in mind that if a top-lighted gallery is too long, the glare from the ceiling will enter into the angle of vision of the visitor and give an uncomfortable feeling of there being rather too much light.

Top-lighted galleries must, however, be used at times, and where such is the case, there are several points which should be carefully considered. The ceiling sash is generally suspended upon hanger rods, and these in turn are connected to trusses which also support the skylight. Care should be taken to keep the bottoms of these trusses at least 5 feet above the glass, as otherwise the shadows of the lower members of the trusses upon the glass will be visible from below. Provision must be made for the cleaning and replacing of the individual ceiling lights. This can best be done by providing tracks to the under sides of the trusses, on which there may be suspended movable platforms which will run along about 1 foot above the glass. The glass itself should be wire glass and should be made of white metal instead of the ordinary green with which most glass is tinted. It is usually of a slightly rippled surface—just enough so that one cannot see the trusses, etc., through it. The glass sections themselves should not be larger than 2

North Wing, Metropolitan Museum of Art, New York
McKim, Mead & White, Architects

feet square because of the difficulty of handling and the increased liability of breakage. The usual practice is to support this glass on a T-bar section and to insert small clips occasionally so that the glass will not rest directly on the T-bar flange but will be about ⅛-inch away. This gives a small opening for air to circulate into the space above, and it greatly helps the efficiency of the heating and ventilating system provided for the galleries.

The artificial lighting of a top-lighted gallery is accomplished by means of electric reflectors arranged above the ceiling sash and disposed of in such a way that an even, well distributed light is secured in the room below. Correct results in this work can be obtained only with the aid of a competent lighting expert and actual field tests to determine the proper number and locations of lights in each gallery, since no two galleries are quite alike.

Side lighting is much used in museums, and unless the windows are too low, it is quite satisfactory. For the exhibition of sculpture and objects in cases, it is unmistakably the best system. With side-lighted galleries the light is strong and natural and comes from a very natural source which adds greatly to the cheerful atmosphere of the room. Contrary to general belief, it is perfectly possible to utilize the blank spaces on the window side of such a gallery, and paintings and sculpture may be well lighted here by means of the light reflected from the other walls and the ceiling. The best results with side lighting are obtained when the windows do not come too near the floor. They should stop well above the eye level. In the new galleries of modern sculpture at the Metropolitan Museum the exterior effect required that the sills of the windows be fairly near the floor. The writer has noticed recently, however, that all of these windows are now kept curtained up to a height of about 8 or 10 feet from the floor, and that with this arrangement a very pleasant result is obtained. If side light is used, it should be from only one side of the room to obtain the greatest efficiency in lighting.

Attic or clerestory lighting is thought by many authorities to most nearly approach the ideal. It is high side light,—the same as is used by the artist in his studio,—and as the light by which often a work of art is produced, it most assuredly should be the best light in which to view the finished work. This method introduces the light near the ceiling, and at the same time has none of the disadvantages of top lighting. Many of the most successful and most beautifully lighted rooms of the Old World have attic lighting. In a room with high side light there is the least possible annoyance from glare. The sources of light are well above the range of the eye in any except the largest rooms, and even then

Photo. Kenneth Clark

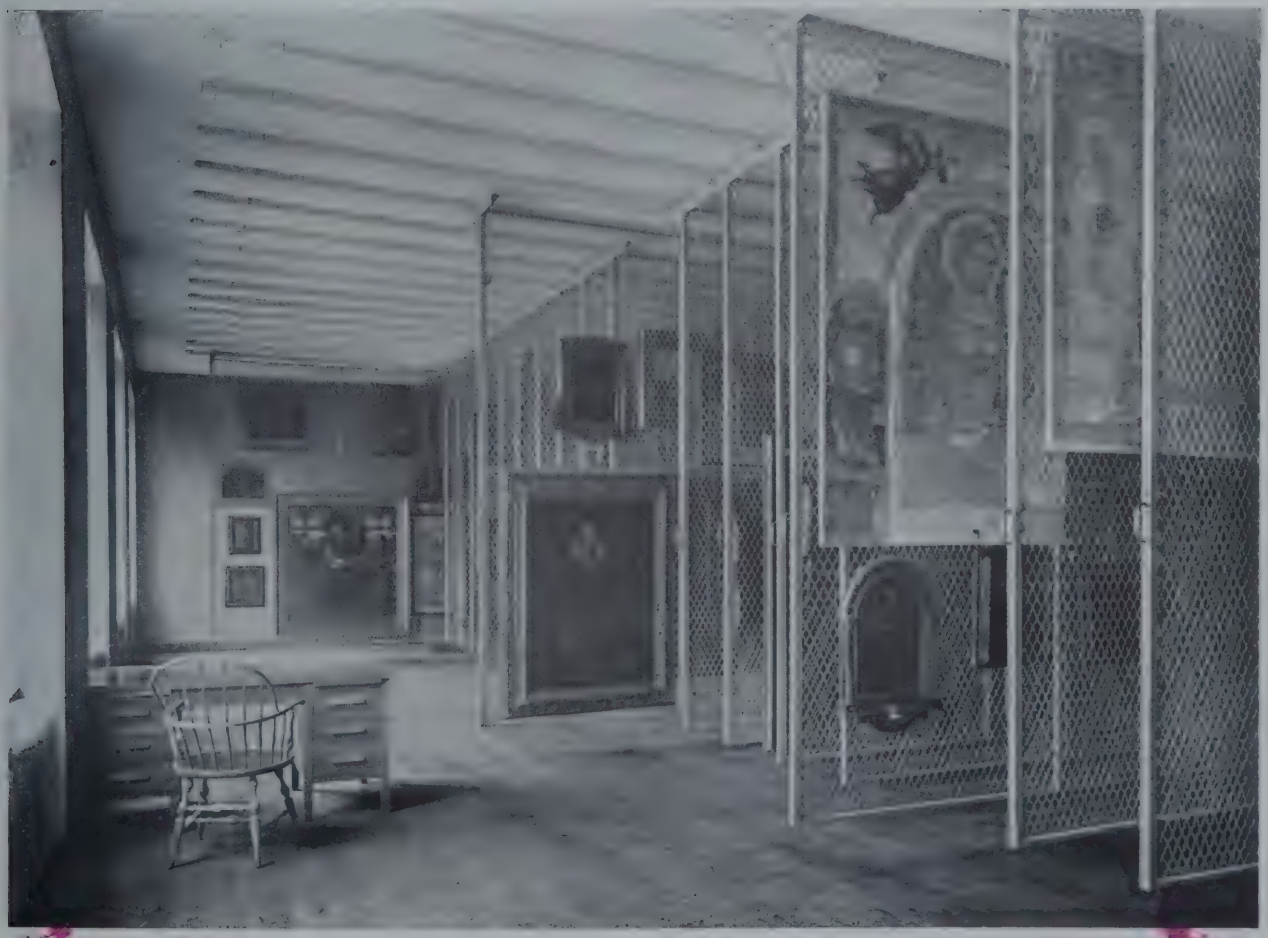
Gallery Showing Usable Corners; Freer Gallery of Art, Washington

Charles A. Platt, Architect

the depth of wall will largely obviate glare. It must be borne in mind, in an attic-lighted room, that the pictures should be hung low enough so that there will be no reflections from the high windows on the opposite wall. Attic lighting allows a maximum use of the wall space for the hanging of exhibits. Care must be taken, however, that cases with flat tops are so placed that there will be no awkward reflections from the high windows.

Interior Decoration.—Both side-lighted and attic-lighted rooms allow the ceilings to be developed in some artistic manner, which is naturally more difficult in a top-lighted room. The treatment of museum galleries from a decorative point of view seems to have been neglected in this country. Yet some of our most pleasant memories of European galleries are those of old Italian palaces with their rooms converted into galleries. Here we see exhibits of the different Italian periods set in rooms with painted ceilings, agreeably side-lighted, with plain, rich, light-absorbing materials on the walls, and we get a feeling that we are seeing the art treasures at their very best. After all, to give the most agreeable impression, a painting, piece of sculpture or a piece of furniture must be exhibited in as nearly its original surroundings as possible if it is to convey the impression that its maker intended. There has been some tendency on the part of museum curators to group exhibits of a like character together in order to create an air of unity and harmony, but this does not seem to have been carried into the architecture and decoration of the gallery itself. A very splendid example of paintings exhibited in their historical setting is that of the gallery of Italian paintings in the Cleveland Museum of Art (page 560). The visitor notices also the fine dark wall covering, which adds so much to the enjoyment of these pictures. Several plain wooden benches of Italian design, for the use of visitors, instead of the chairs, might help, giving atmosphere to this room.

Another very pleasant example of decoration which aims to give the exhibits a proper and historical background is the recently completed Pompeian court in the new wing of the Metropolitan Museum (page 556). Here a Pompeian court was created with all its brilliance of color. The large panel tones are a Pompeian red, as also are the lower parts of the columns. The wainscot and floor are black. This gives to the whole court the old Roman and Pompeian atmosphere which is so favorable to the exhibition of Greek and Roman bronzes and marbles. A very definite impression of a certain period of art is created here and to much greater advantage than if these various objects were exhibited in their usual cold, neutral backgrounds in a room utterly devoid of any memories of Greece



Storage Racks Which Allow Picture Study; New Fogg Museum, Harvard University
Coolidge, Shepley, Bulfinch & Abbott, Architects

or Rome. The educational value of an exhibit in imparting to the public the worth of any art object will be greatly increased if a historically correct background is provided, and this need not be difficult.

Galleries should be kept as small as possible. This gives a greater feeling of intimacy and restfulness. There are some few pictures and groups of sculpture which must be viewed from a distance, but these can be taken care of in special locations. The galleries should also be kept as low as is practical and at the same time obtain good light. In general, the rooms should be proportioned to the objects which it is intended to exhibit in them. Very small objects, such as prints and etchings,—things small in themselves and intended to be seen at close range,—should be in the smallest rooms, rooms of from 8 to 10 feet high, and there should be reflectors around the ceilings about 18 inches from the walls which will cast concealed light on the prints. The walls of such rooms for the exhibition of prints are usually sheathed with matched soft wood and then covered with some coarse fabric. This allows the prints to be easily hung at various heights by simply tacking through the fabric and into the wood. A very good method for hanging larger pictures in the galleries is to secure a Z-bar to the masonry wall in such a manner that it will form the bottom member of the cornice. A hook is then inserted over the top of the Z-bar. The hanging of pictures in the corners of galleries is often troublesome. This can be avoided by cutting off the corners of the gallery with a 45-degree corner, which should not be less than 4 feet in width. The surface thus created makes an admirable space for an exhibit, its form and location giving it importance.

Gallery of Italian Painting, Cleveland Museum
Interior by Arthur Loomis Harmon, Architect

Care should be taken to see that the positions of all push-buttons, thermostats, register faces, etc., are carefully studied in order that they do not interfere with the exhibits, and also that their positions may be such that they will look as well as possible. All windows should be equipped with blinds which roll up at the bottom, in order that the low light may be shut off when desired. Radiators should be enclosed or concealed wherever possible. They are unsightly and collect and circulate dust. The floor should be dark in tone. Marbles or a medium dark terrazzo are good. Wood floors are sometimes difficult and expensive to maintain. The Metropolitan Museum has had very satisfactory experience with a heavy cork tile floor, laid herringbone with strips about 2 feet long. This has the advantage that worn places can be easily replaced at little expense, and floors in certain places wear out quickly.

Most museums have many paintings which either for lack of hanging space or other reasons are not on exhibition. To have these paintings readily available for inspection has been a serious problem. Several museums have lately used a very ingenious method of storing these pictures and at the same time having them at hand for study. Metal screens, covered with heavy wire netting, are suspended vertically at right angles to the walls in the storage rooms. The pictures are fastened to these frames, which are on tracks, and placed as closely together as possible. When a picture is desired, the frame which carries it is pulled out and the painting is on view. With this installation in a lighted room, every picture in the collection is at once available.

Too much emphasis cannot be laid upon the subject of seats. Most museums do not provide enough comfortable seats. The pleasure of museum visiting will be greatly increased if plenty of benches and seats are provided in the centers of the various galleries. Light chairs that are easily movable should be provided also, so that they may be placed before any particular object that a visitor wishes to study.

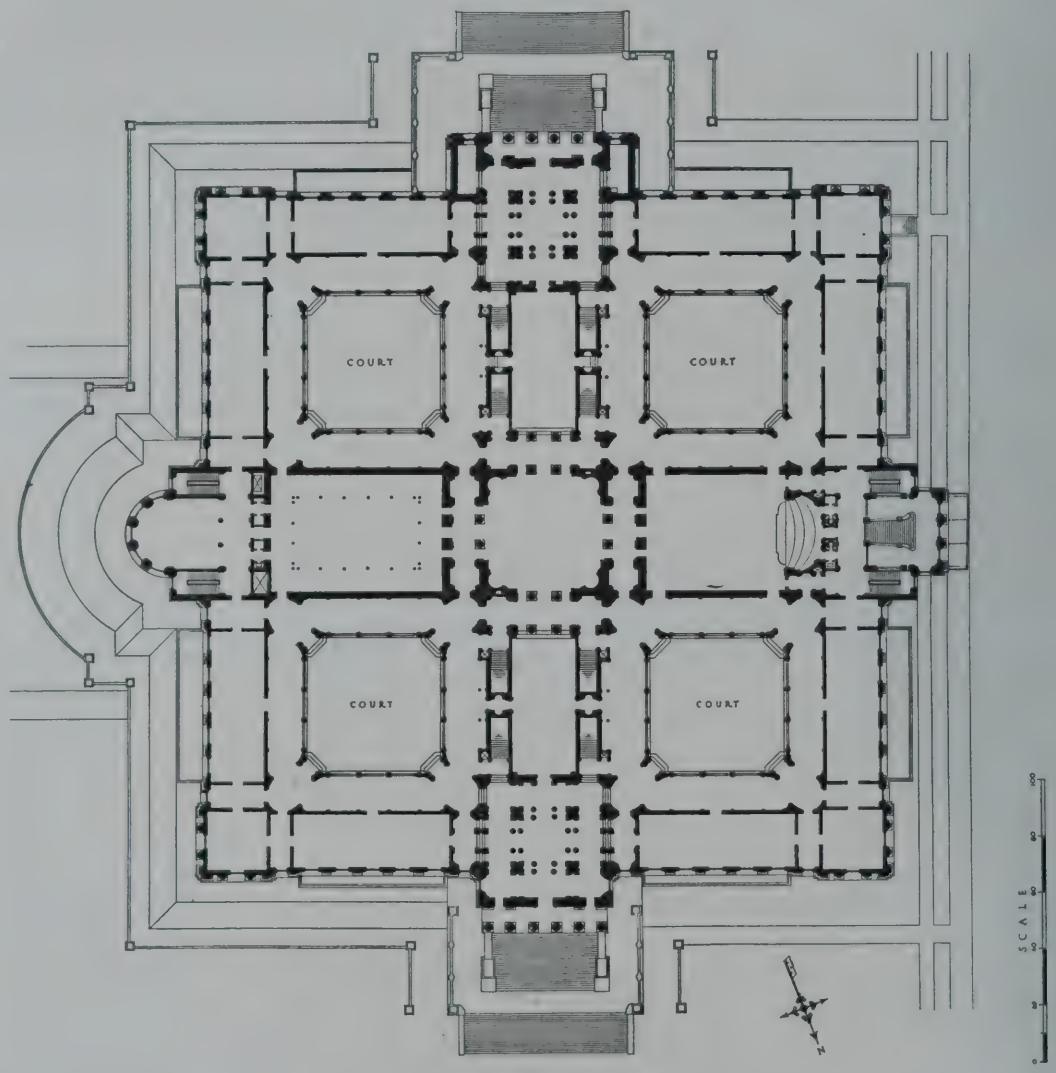
Finally, it should be remembered that an art museum is a place to which people go for pleasure as well as for study. The whole sojourn of the visitor while in the building should be studied and made as enjoyable as possible. He should be conscious of small and intimate rooms, rooms which welcome him and make him feel at home. There should be no cold, forbidding, architectural halls in which one does not dare speak above a whisper. The light should be pleasant and soft, and the walls and floors should be rich and restful. In fact the entire interior of the building should be a background and setting worthy of properly displaying its art in a personal, satisfying, and friendly manner.

ENTRANCE FRONT

CORRIDOR OF SCULPTURE

BROOKLYN INSTITUTE OF ARTS AND SCIENCES

McKIM, MEAD & WHITE, ARCHITECTS



PLAN, BROOKLYN INSTITUTE OF ARTS AND SCIENCES

McKIM, MEAD & WHITE, ARCHITECTS

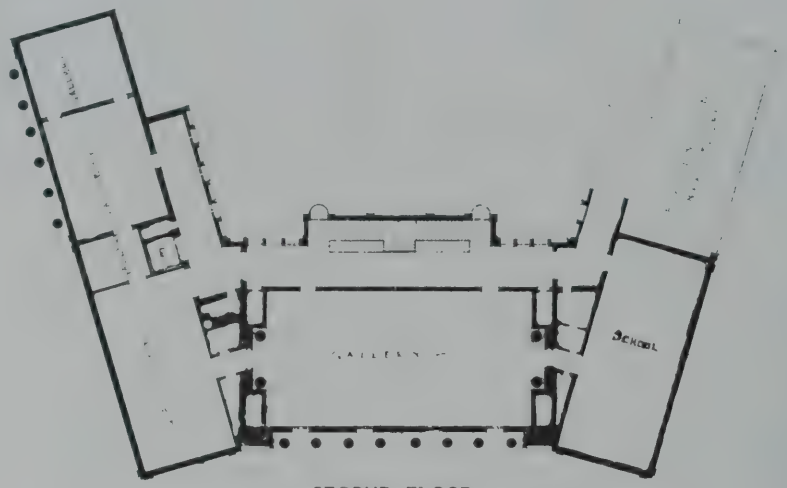
ENTRANCE FRONT

Photos. Edison Studio. *Plans on Back*

PERSPECTIVE

MUSEUM OF FINE ARTS, HOUSTON, TEX.

WILLIAM WARD WATKINS, ARCHITECT



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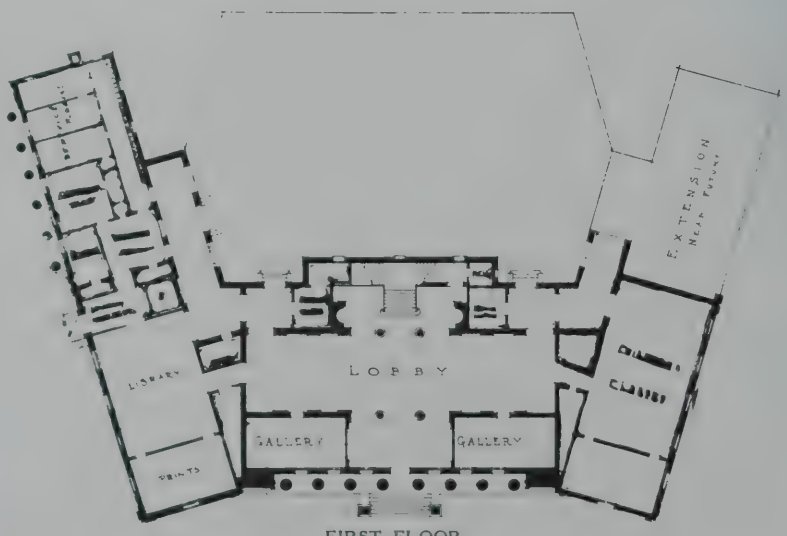
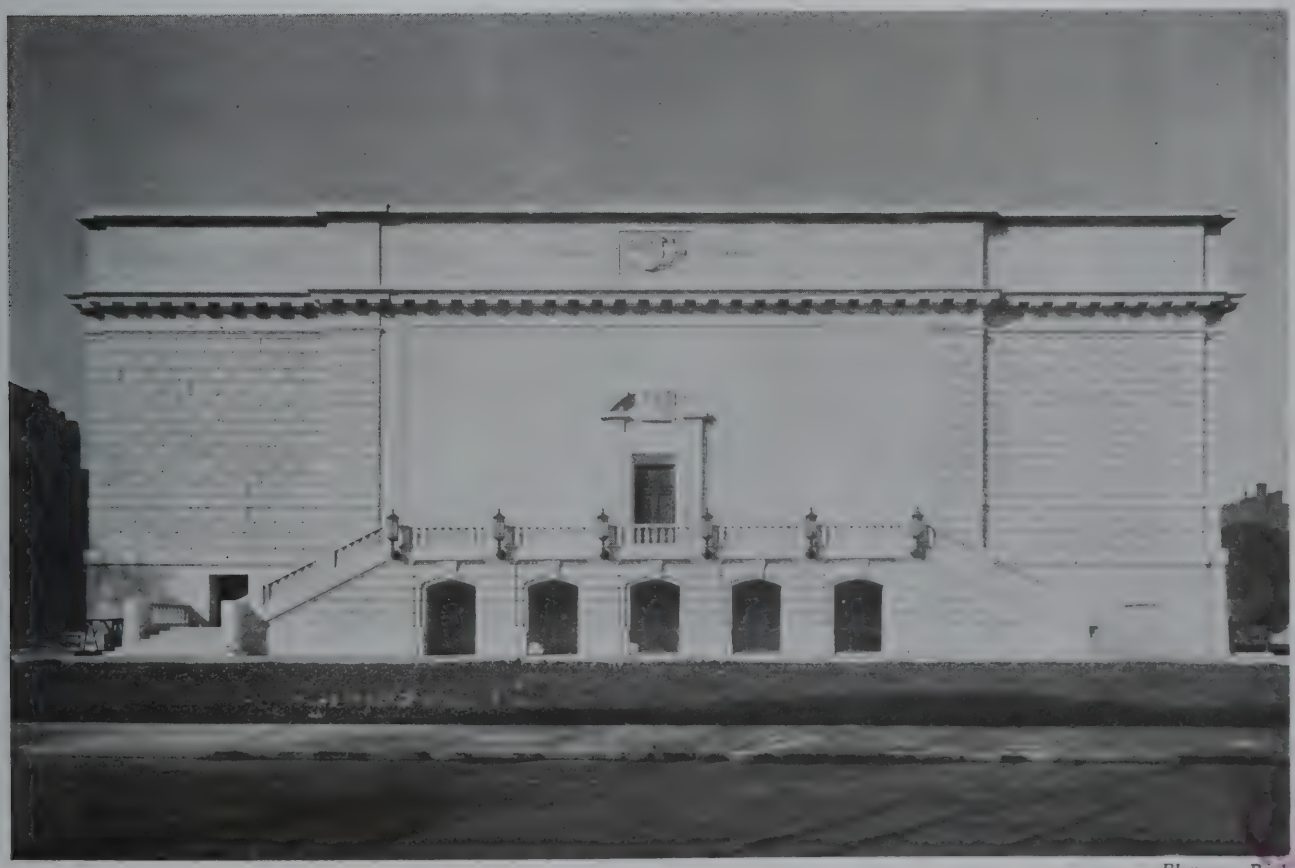


FIRST FLOOR

PLANS, MUSEUM OF FINE ARTS, HOUSTON, TEX.

WILLIAM WARD WATKINS, ARCHITECT

MAIN FACADE

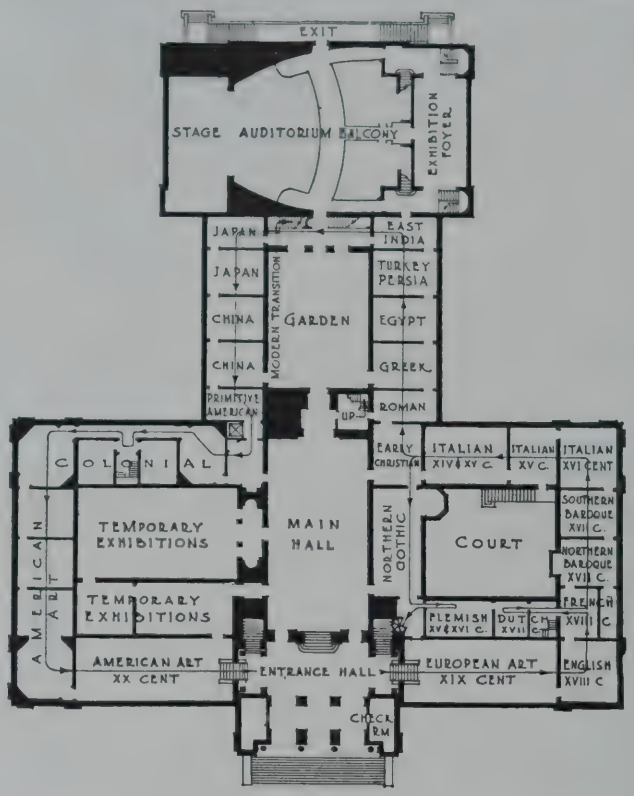


Plans on Back

AUDITORIUM ELEVATION

DETROIT INSTITUTE OF ARTS

PAUL PHILIPPE CRET AND ZANTZINGER, BORIE & MEDARY, ARCHITECTS



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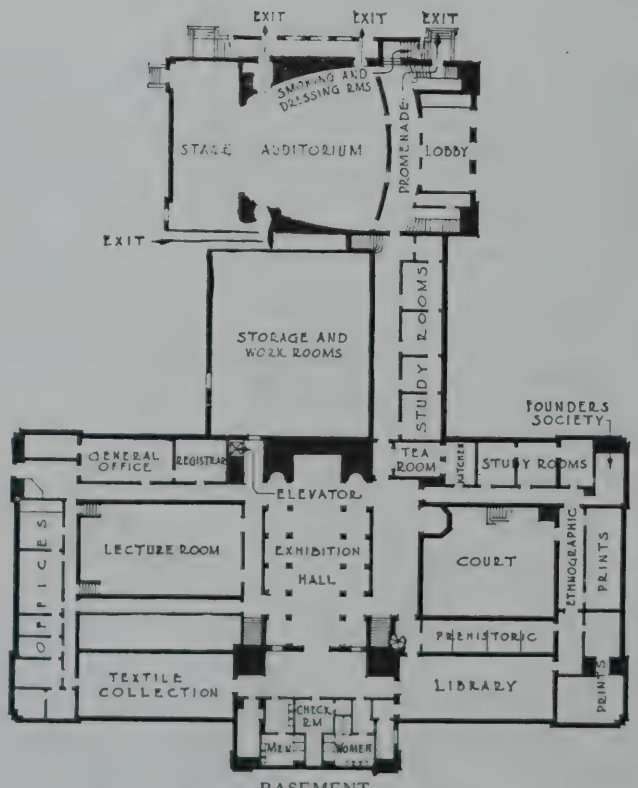


BASEMENT

PLANS, DETROIT INSTITUTE OF ARTS

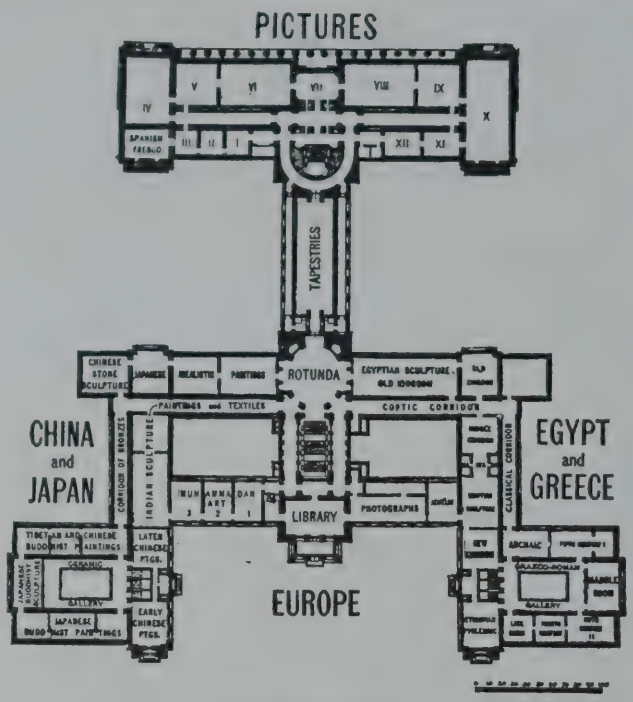
PAUL PHILIPPE CRET AND ZANTZINGER, BORIE & MEDARY, ARCHITECTS

FENWAY FACADE

© Museum of Fine Arts, Boston

Plan on Back

ROTUNDA; DECORATIONS BY JOHN SINGER SARGENT
MUSEUM OF FINE ARTS, BOSTON
GUY LOWELL, ARCHITECT



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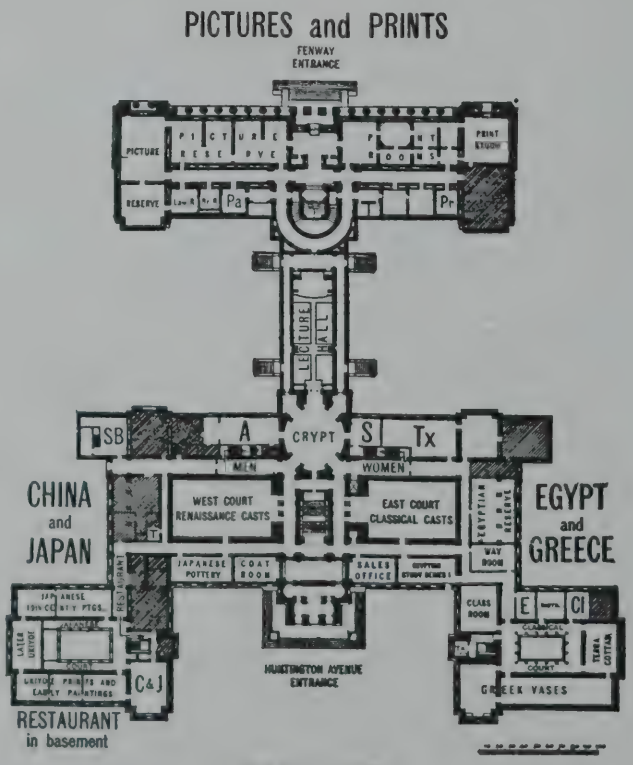


FIRST FLOOR

MUSEUM OF FINE ARTS, BOSTON

GUY LOWELL, ARCHITECT

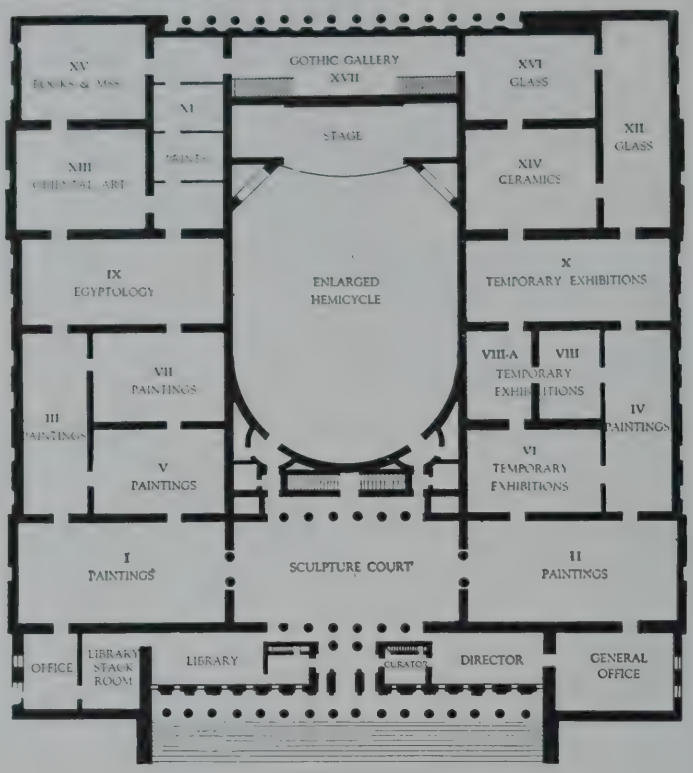
ENTRANCE FRONT

Plans on Back

SCULPTURE COURT

TOLEDO MUSEUM OF ART

EDWARD B. GREEN & SONS, ARCHITECTS



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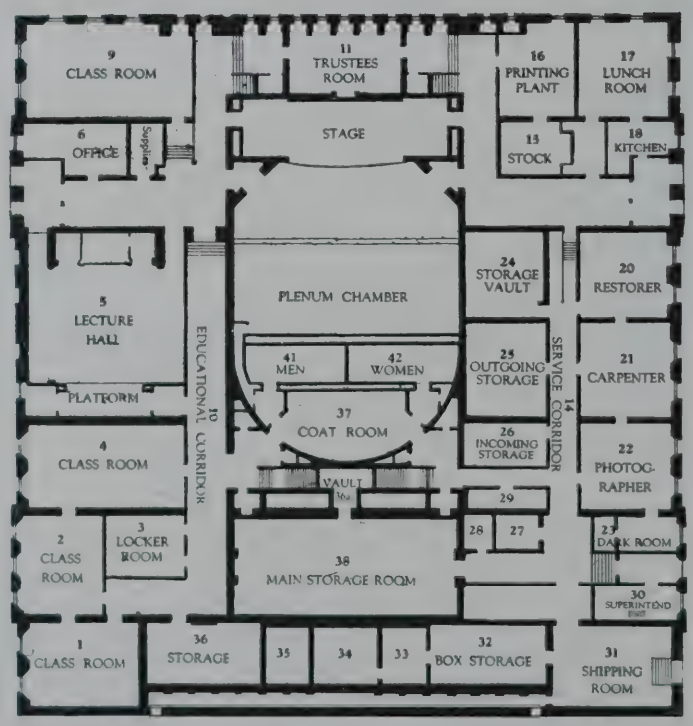


BASEMENT

PLANS, TOLEDO MUSEUM OF ART

EDWARD B. GREEN & SONS, ARCHITECTS

Photo. Tebbs & Knell, Inc.

ENTRANCE FRONT

BOSTON PUBLIC LIBRARY

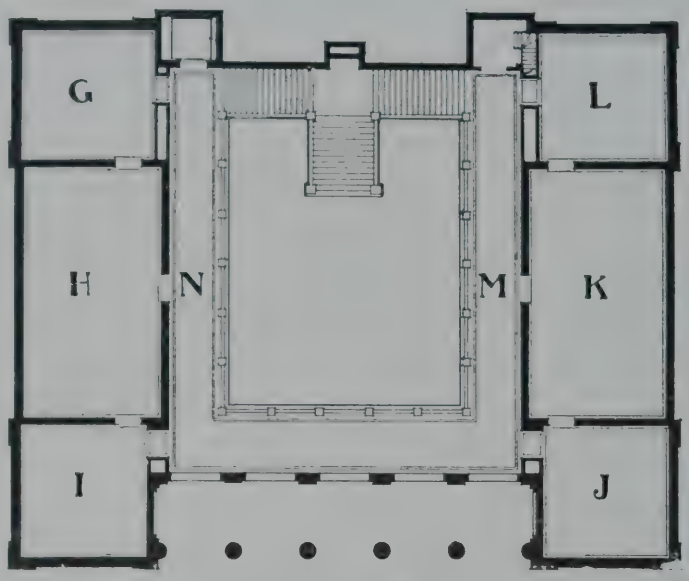
Photo. Louis T. Fritch.

Plans on Back

SCULPTURE COURT

ISAAC DELGADO ART MUSEUM, NEW ORLEANS

LEBENBAUM & MARX, ARCHITECTS



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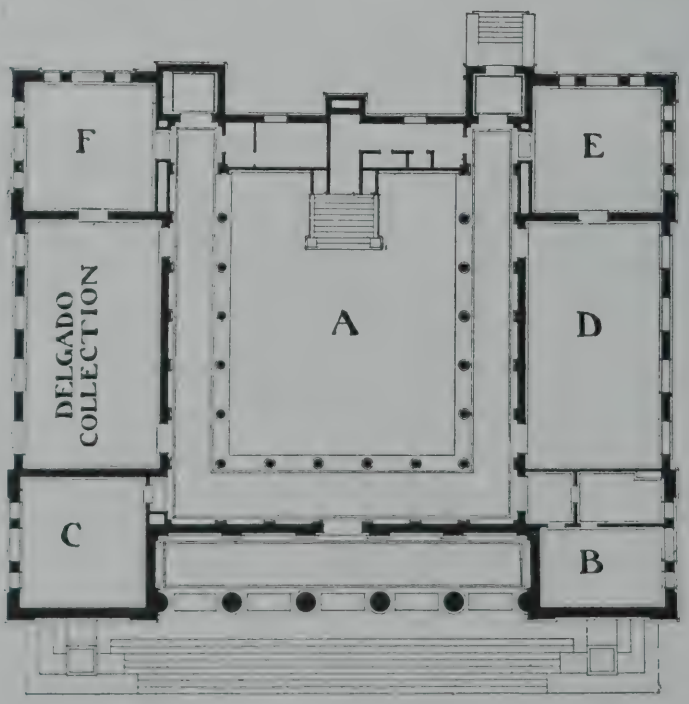


FIRST FLOOR

PLANS, ISAAC DELGADO ART MUSEUM, NEW ORLEANS

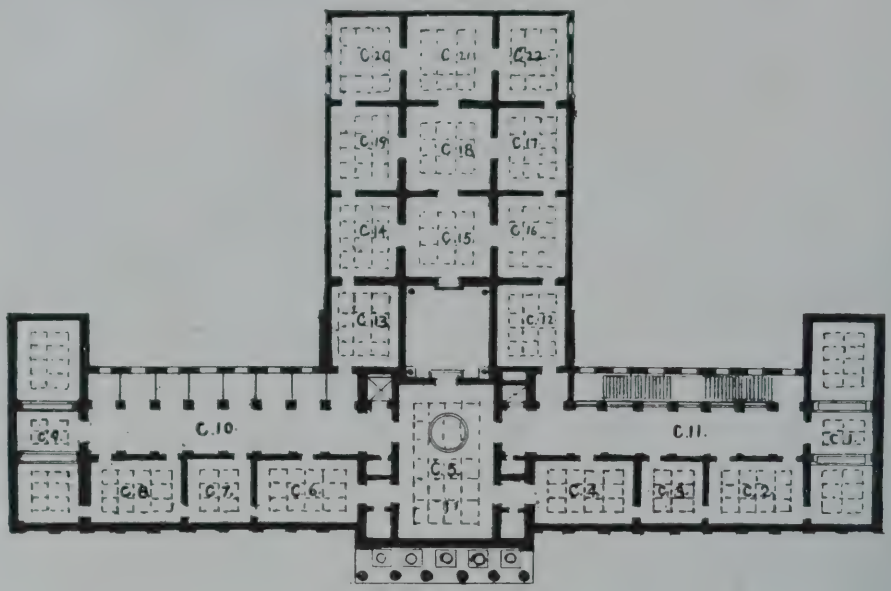
LEBENBAUM & MARX, ARCHITECTS

ENTRANCE FRONT

A GALLERY

MINNEAPOLIS INSTITUTE OF ARTS

McKIM, MEAD & WHITE, ARCHITECTS



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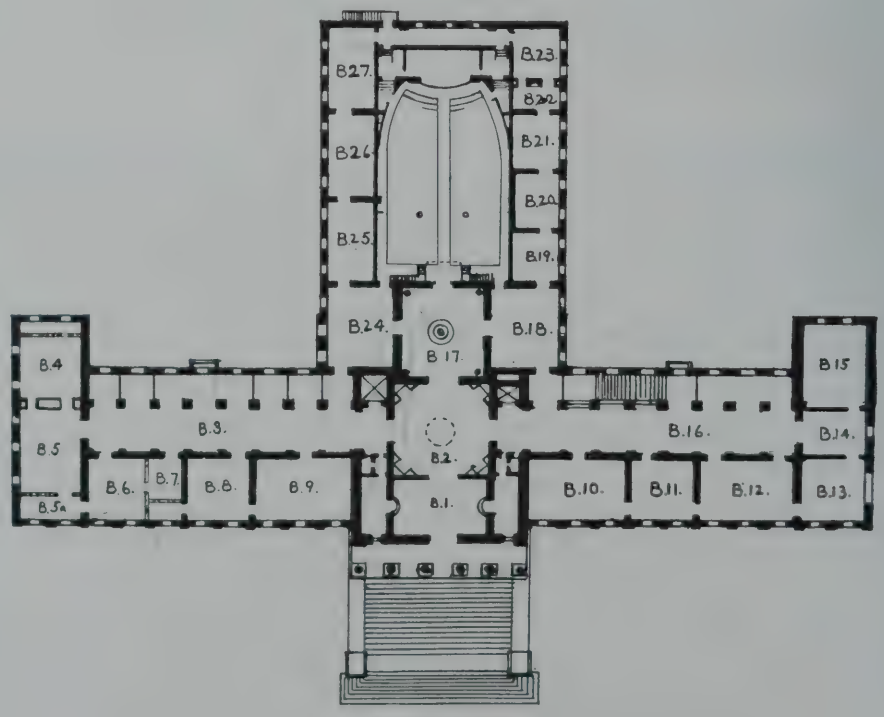


FIRST FLOOR

PLANS, MINNEAPOLIS INSTITUTE OF ARTS

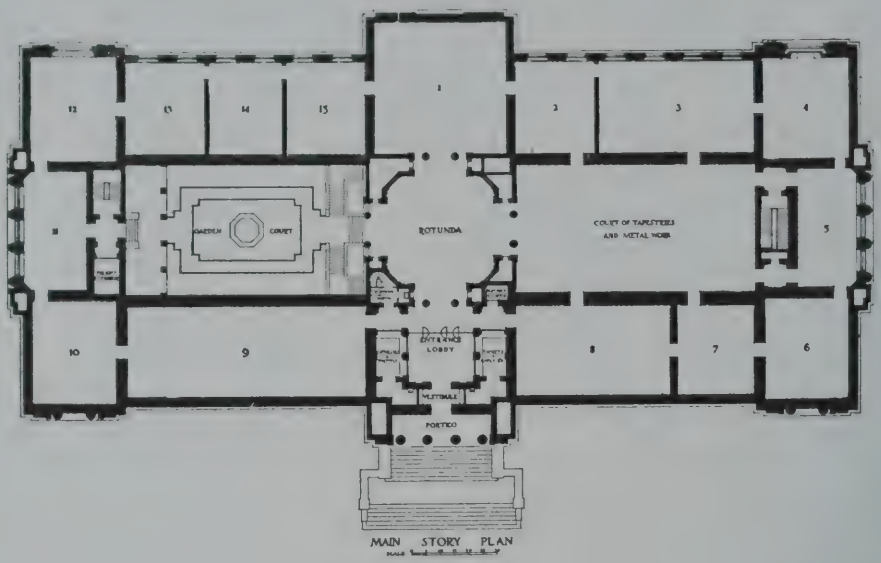
McKIM, MEAD & WHITE, ARCHITECTS

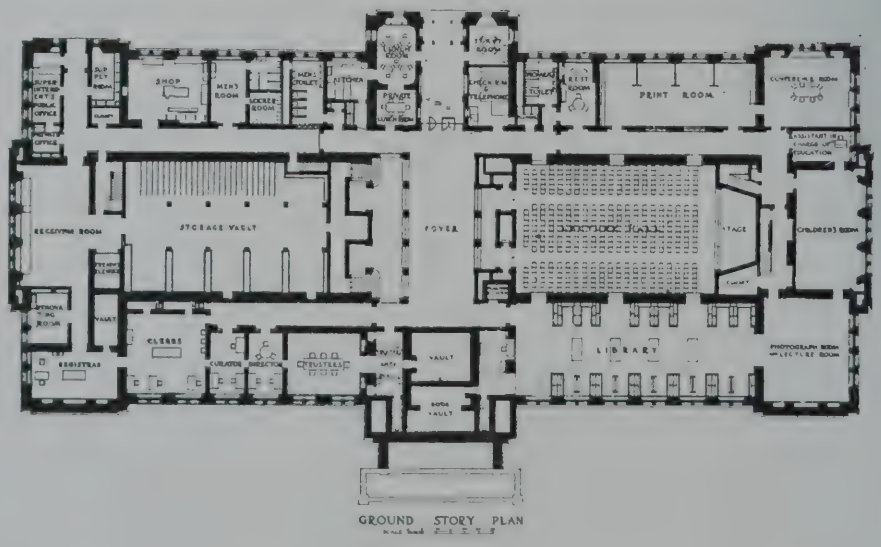
DETAIL, WEST FRONT

MAIN ENTRANCE

CLEVELAND MUSEUM OF ART

HUBBELL & BENES, ARCHITECTS

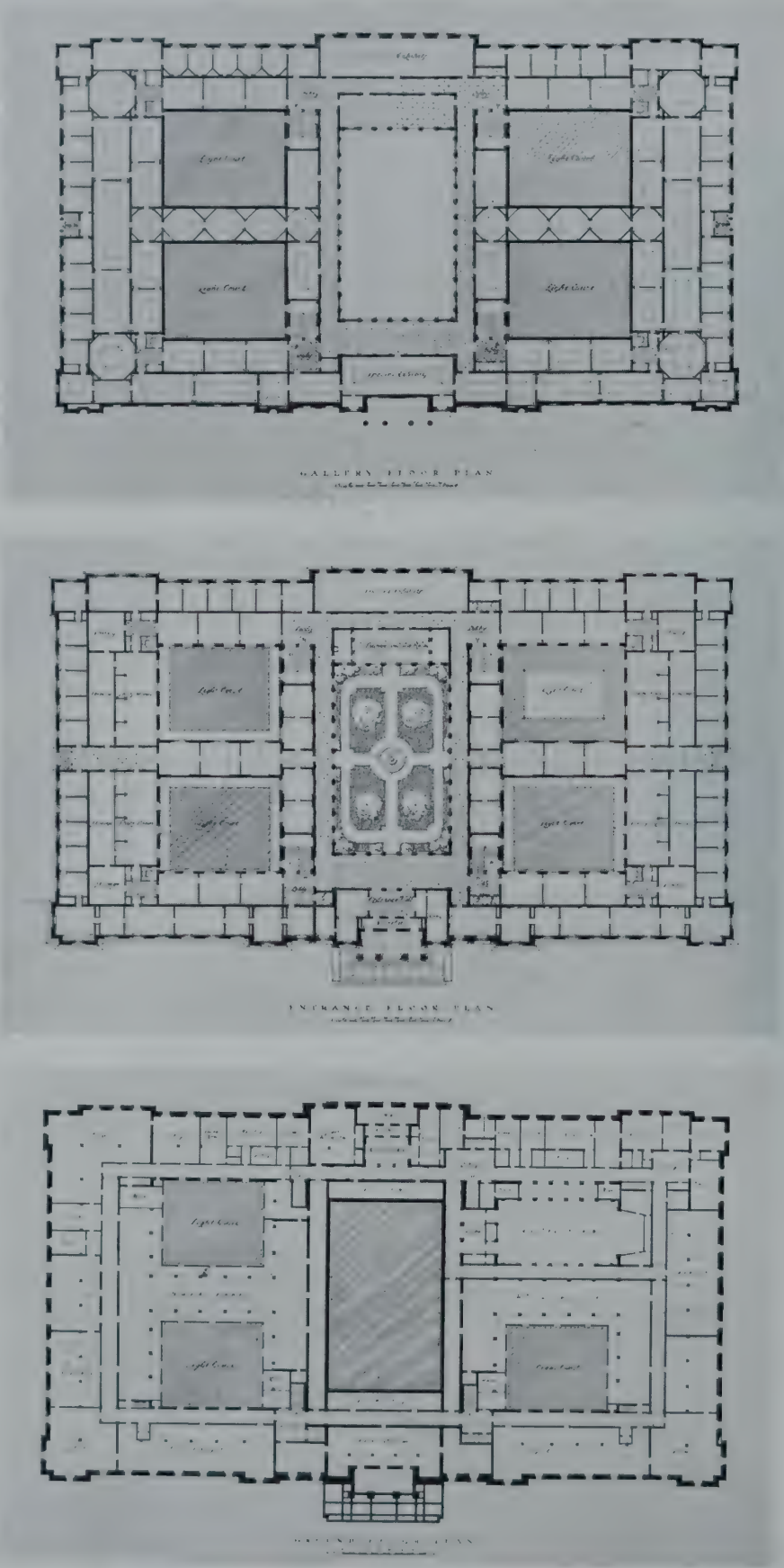




PLANS, CLEVELAND MUSEUM OF ART

HUBBELL & BENES, ARCHITECTS

PRELIMINARY STUDY, NATIONAL GALLERY OF ART, WASHINGTON
CHARLES A. PLATT, ARCHITECT



PLANS, NATIONAL GALLERY OF ART, WASHINGTON
CHARLES A. PLATT, ARCHITECT

A Trend in Museum Design

By CHARLES G. LORING

AMERICAN art museums have undergone a fundamental change during the last generation, a change in the very theory of their function, and yet one which has been scarcely noticed by the general public. From year to year newly presented features attract wide attention. An Egyptian tomb is opened, or the work of a French sculptor is imported, or Balkan embroideries are the rage, and kindred subjects in the permanent exhibitions attract careful inspection. The mass of the display seems about the same to out-of-town visitors, to the art students, and to *pater familias* with the children,—but the background is being constantly modified. In the minds of art museum authorities, the trustees, directors, curators and experts in general, the major theorem is what to exhibit. Raising funds is hard work, but how best to expend them is fascinating. Technical details of construction, fenestration, circulation and humidification must be skillfully adjusted and above all adjusted to the theory of what is to be exhibited. The personification of the museum must be visualized by the authorities before the architects are commissioned to embody it in the building itself, and it is the museum authorities who must determine for what section of the public the exhibitions are primarily intended; or if not for the public, as in private galleries, what external expression is to be given it. The gradual revolution which has occurred in the theory of what to exhibit is therefore fundamental and concerns very largely the emphasis on quality as against quantity.

Fifty years ago objects of art of the first order were scarce in the United States, and foreign travel was indulged in by only a very few. The museum public was satisfied with an elementary exhibition; almost any paintings, not necessarily masterpieces, sufficed; plaster casts, not original bronzes or marbles, were quite acceptable. Certainly a copy of a Rembrandt or a portrait of the "School of Rembrandt" was better than no painting at all, and to be able to compare the sculpture of Greece and that of the Renaissance, full sized and in the round even if in plaster, was better than to be limited to steel engravings and photographs. The galleries were for art, but the intellectual craving was better nourished than the æsthetic. Today, when the sources of material have been so expanded, and the importation of objects of art is an ever-mounting tide, more and more museums may select what they want. Today, when the connoisseur's interests are eclectic, he is as well satisfied with a Thibetan fresco as a Praxiteles relief, and an anonymous Italian primitive fragment provokes his enthusiasm, although it be meaningless to the "common people." With such parallel influences, the trend is to concentrate on a few superior objects and to banish the exhibitions appealing primarily to student class work in the history of art or to the immigrant populations which crave reminders of their transatlantic homes. This trend is finding expression in the modern museum plan in a greater use of small rooms where the attention may be focused on two or three masterpieces, well lighted and set at the level of the eye against subdued backgrounds, rather than of long, wide galleries with skylights where the walls are crowded with a bewildering display. Oddly enough, this very evolution has caused a reversion to the type of the earliest continental public galleries. When states or cities first collected their art treasures for the enjoyment of their citizens, they did not erect new structures but made use of existing palaces, the residences of kings or nobles, with endless suites of intercommunicating rooms, as in the Louvre or the Pitti.

The emphasis laid by many museum directors and trustees on elimination rather than inclusion in the scope of their exhibits, in making their appeal to the cultured rather than to the uneducated, calls for the development of reserve galleries or rooms which are both for convenient storage and special study. Basement vaults with only artificial lighting are no longer acceptable. The trend toward quality rather than quantity is not as clearly mirrored in the facade as in the plan. This is because with the small number of museums erected, a new motivating theory cannot find general expression as quickly as in school or bank design, where many minds are studying and re-studying the same problem. The originators of a modification in museum technique, who are not architects, can express themselves directly only in the sizes and grouping of rooms and but indirectly in the artistic subtleties of exterior design. Certainly there has been a swing away from the monumental, but whether this is established or is due to conditions remains to be seen. This gives particular interest to certain new buildings.

If it is permitted to generalize from one example, not to prove a rule but to illustrate a tendency, the new Fogg Museum of Art at Cambridge may well be considered. The Georgian facade, devoid of columns and pilasters, with small-paned windows white-framed against the brick, has none of the neo-Classic, Greek, Roman, or Beaux Arts about it. It is in quite a new mode, and yet dignified and substantial. Certainly there is nothing spectacular, nothing to lure the average man in the street off the street or the average student away from the bleachers or his flivver! The exterior does not attempt to proclaim the treasures within; rather it suggests a very rich and exclusive metropolitan club house. It is almost a surprise to have the doorman welcome the casual visitor and not hold him in the vestibule while his card is being sent up to the house committee!

ENTRANCE DETAIL

PARRISH ART MUSEUM, SOUTHAMPTON, N. Y.

GROSVENOR ATTERBURY, ARCHITECT

Museums of Art

By HENRY W. KENT

WHAT kind of building is suitable for a museum of art? is a question more often heard nowadays as the museum "idea" spreads in the country, and as small and large towns begin to bestir themselves in the creation of such institutions. Formerly when a museum building was considered, there were but two thoughts in the minds of the donors, trustees, or committees responsible for it, and of the architect entrusted with the task,—namely, to provide space for the display of the objects of art in hand, if there were any, and to give room for a reasonable growth in the number of similar objects. Galleries for paintings and a "sculpture court" were usually the result, with an office or two thrown in for the "director," and the basement assigned to storage. It goes without saying that the exterior of the building was planned to be a credit to the town, of marble if funds permitted, in the classical manner with columns in front, and while it was usually considered that the site should be accessible, that need does not appear to have outweighed considerations in favor of a park or an outlying district, particularly if it cost nothing!

The Traditional Museum. There were plenty of traditions concerning all of these matters for the guidance of those who had the destinies of such institutions in their hands, and in fairness to these gentlemen it may not be amiss to consider briefly what they were. First, as to the objects to be collected by and housed in a museum of art. Until comparatively recently such museums were concerned only with the "fine arts," and that meant painting and sculpture. The adjective, to be sure, was not added until the nineteenth century, but since all of the great museums of Europe contained such things, and particularly since the historians of art persistently applied themselves to these subjects to the neglect of the others, there seemed to be reason for believing that they should be "collected" to the exclusion of the other arts. The tradition, however, allowed the inclusion of the archæological remains of Egypt and Greece; the Vatican, the Louvre, and the British Museum all included them, mummies and all, along with the "fine" arts,—so why should not we? What the Vatican and the Louvre had done set the pace for our ambitions and created our traditions in museum collecting. By the same token, these museums gave us our ideas as to correctness in architectural matters,—halls, galleries, rotundas, monumental flights of steps, lofty walls,—everything dignified and stately and, of course, all sky-lighted.

Broadening the Museum's Scope. Thus we gained our traditions, and where could we go for better? Where, indeed, unless we were to put our minds upon it and work out for ourselves the solution of our own problems? For this there would be needed a little study of the histories of the Vatican and the Louvre, of why and how these places came to be used as the public repositories for collections of works of art, and why their galleries, rotundas, etc., were what they are, and why sky-lighted; a little consideration of the story of collecting and collectors,

Photo. Samuel H. Gottscho

Parrish Art Museum, Southampton, N. Y.

Grosvenor Atterbury, Architect

and of the difference in conditions that existed in Rome and Paris in the seventeenth and eighteenth centuries as compared with those existing in ours; and a little reasoning as to the differences in public obligations involved in such possessions here and abroad. It is the conclusions which resulted from the study of these things which, after years of following traditions, have been responsible for our present idea as to what museums are for, what they ought to do, and what their buildings should be like,—ideas which have been thought out in the last 20 years, while the old traditions mostly have gone by the board. We have outgrown them. This principle was responsible for the cutting out of that early Victorian snobbery, the word "fine," to designate certain art, and the inclusion among the arts of the "lesser" or "smaller," which were formerly debarred. These are the arts which have an intimate relation to the things of daily life, and to the industries; which claim a vital interest from those who make, those who buy, and those who sell. With the collecting and display of examples of these arts there came a change in the kind of service the museum rendered to its public; people were now sought out and gathered in, instead of being passively observed when they turned up to gaze,—a service of personal relationship for giving assistance in the gaining of pleasure and profit,—the museum was humanized.

The New Attitude. But how did all this affect the architecture? will be asked. Simply enough. The dignified and stately Louvre-Vatican *salon* and *sala* gave way to rooms adapted to the display of other things besides Renaissance paintings and Greek sculpture, to rooms so strictly adapted to needs that their specifications could be written only from a knowledge of them. The new attitude toward the public called attention, also, to the need for consideration of the people who frequent the museum, and from points of view other than as a queue coming in at one door, staring at things, and going out by another door. Their comfort, their convenience, their study, their work, were to be provided for, in rooms adapted to these needs,—this in the new order.

All of these matters bring us to a definition; an art museum is a place where objects of art are collected for the purpose of their display to the best advantage, in order that people may get from them, with or without help, such enjoyment as the things can give and such practical help in solving their own problems as they may desire. The whole scheme of the modern museum and of its building is governed by this, and, briefly, in this way. Its functions are threefold: acquisition, exhibition, and exposition; and to carry them on adequate space is required for these functions; executive, administrative (and here should be included housekeeping), curatorial (here should be included the matter of exhibitions), educational, and public relations, all vitally necessary.

The Executive Needs. These requirements are obvious:—rooms for the boards of trustees and, in

Photo. Tebbs & Knell, Inc.

Gallery, Eastman Memorial Foundation, Laurel, Miss.
Rathbone DeBuys, Architect

larger museums, for committees, for secretaries, and the treasurer, all preferably kept together. The administrative and curatorial needs include offices for heads of departments, secretaries, and clerks, which may be together in one group, or spread about in relation to the departmental exhibits. There should be a receiving office, a room for packing and unpacking, a registrar's office, and a superintendent's office; quarters for engineers and electricians, and shops for various groups of workmen, such as carpenters, painters, roofers, upholsterers, plaster workers, etc., with stock rooms and rooms for the storage of materials. Large museums require, also, quarters for printers and photographers. For the housekeeping service, there must be rooms for all of the shop men, and for the attendants or guards,—dressing rooms, rest rooms, lunch rooms, baths, toilets, etc. There must be space for operations such as cleaning and polishing (some museums have laundries), and there must be a telephone central office, and a post office wherever the needs of a museum warrant it.

Storage Requirements. Not the least important rooms devoted to the objects of art are those for their storage. Until quite recently, as has been said, these were usually in the basement, in dark corners. Here we have a curious contradiction on the part of museums in that while the greatest pains are taken when exhibiting objects for the public to gaze at, in dust-proof cases and with careful regulation of temperature of rooms, etc., these same objects off exhibition, in most museums, are given storage without provision for any of these protective influences. It is obvious that such things should receive the same care in storage as when on exhibition. For this purpose, well lighted rooms should be provided, and every attention should be given to temperature. Such rooms should be easily accessible, not only to the janitor but to the interested public. Some museums have awakened to this necessity, and progress is the order of the day. Storage rooms may be scattered, so as to fall into close relation with the departments to which they belong, or all housed in one building. Common sense dictates the latter, but curators often prefer the former arrangement, and architects' plans usually compel it. On the whole it is preferable.

Exhibition Rooms. There still remain to be considered the rooms for exhibition, with all the details of size, light, temperature, proportions, trim, etc. During the past 20 years, especially in Germany, such rooms have received close attention, but the conclusions arrived at do not allow final pronouncements, since the whole question of collections and methods of showing them in these rooms is still in a debatable stage. The reason for this is easily found. The art or science, whichever it be called, of exhibition, and the principles governing such presentations, have never received the attention that eventually must be given to them. As yet they have not all been discussed even by museum people, our only thoughtful contribution, for instance, on the

Gallery, Art Association of Indianapolis
Vonnegut, Bohn & Mueller, Architects

psychology of the thing coming recently from Lee Simonson in an illuminating essay. His presentation of the matter, from the point of view of the man who studies his audience, leads at once to the eye-opening conclusion that there is a point of view on this subject in addition to that of the educator or æsthete or antiquarian,—namely, the showman's. Crowd psychology, and the psychology of the individual beholder of objects of art, may well be studied as something quite as important as the equipment of the curatorial arranger of the objects exhibited.

Provisions for Studying Exhibits. It is clear from all of this that no museum can safely build its galleries without knowing exactly what it expects to show in them, and how. There can be no general architectural rules for the proportioning of them. Some objects demand large, some small, rooms; some demand high ceilings, some low; some demand one kind of light, others another sort,—and so on. Even galleries for paintings, which the architect used to claim for his own, now, because the curator has found out the value of classification by schools and groupings, are subject to experimentation in the interest of effectiveness in all sorts of ways. Appropriateness is discovered to be a virtue. A well known museum still exhibits snuff boxes in a room with a 50-foot ceiling! As we have pointed out already, the chief development in museum policy has been in the recognition of the obligation to render active public service, and this has affected its building as widely as its economy. Today, under this head, a museum requires a library, with rooms for the consultation and storage of photographs and lantern slides; a lecture room of good size with all the modern equipment of such a room; and smaller lecture rooms, or classrooms, for adults and children; study rooms, where objects may be seen and examined at close range; and for the comfort and convenience of its visitors, cloak rooms, rest room, smoking room, lunch room, a room for the giving of information, and a salesroom for publications. These rooms should be ample in size, conveniently placed, and pleasantly arranged, not tucked away in cellars and dark places. The people who pay the taxes deserve consideration. There are certain other matters, however, which should be emphasized here. Whatever be the arrangement of the parts of a museum building used by the public, the relation of room to room, and of section to section, is important; and whatever be their systems of ventilation and lighting, trim, finish, or decoration, the circulation of the visitors through these rooms, the economical method of policing them, and the comfort and convenience of visitors and employes alike in traversing them are all to be considered as major problems to be solved.

Meeting Modern Requirements. A few more words of warning and of suggestion to architects may not be amiss. The public wants the entrances to its buildings on the street. It will not mount monumental stairs if it can find an elevator. The theaters found this out long ago,—the cheapest seats are upstairs. The rotunda,—so effective in Roman baths,—is useless in a museum, and large courts with the architect's embellishments, if they are provided for exhibition use, are a delusion and a snare, to be ripped off if possible when his back is turned. In a museum building the pressing problem for the architect to solve is the arrangement of the different kinds of rooms devoted to the different functions,—executive, administrative (not to forget housekeeping), and public service,—so that they shall be perfectly related and perfectly adapted to their work; and most important of all is the provision in the plans for the extension of all of these, appropriately, economically, and effectively, when the time to enlarge the building shall come. The building of the Cleveland Museum marked a turning point in this form of architecture. There the three-fold functions of the museum were recognized for the first time, and provision made for them, with the result that this museum has come to furnish principles in buildings of this kind. It would be a pity, however, if the success of that first embodiment of the idea should lead, as there are signs that it has, to the use of a stereotyped system. The Cleveland Museum, located in a large park for good and sufficient reasons, included in its plan a garden court, but it does not follow that all museums, especially if they have sufficient space around them, should have such courts. A court in a museum located in the heart of a crowded city is a good thing if it can be afforded. There should be no such thing as a stereotyped museum of art. Each presents its own problems, and should deal with them accordingly. A stereotyped museum structure means a cheap building.

Summary. The museum has made a new definition for itself, based upon a new understanding of its obligations to the community. It has assumed an active, even an aggressive, part in the public life. It has ceased to be a passive agent in artistic development with but two functions,—the acquisition of works of art and the display of them. It has taken to advertising its wares and services, as one who seeks to make a profit on an investment. These facts have changed its ideas of its architecture, and the problems of the building, once simple, have become complicated. These problems which, when simple, were thought to be easily solved by the architect who knew his Louvre and Vatican, now need wisdom and forethought in providing for the business of the other functions which can be given only by the man having experience in them. The plan must emanate from the museum man with the architect to help him. The Louvre-Vatican idea of museum functions is as dead as the dodo, and it follows as a matter of course that the Louvre-Vatican style of building is no longer adapted to the new ideas. The sooner it and the dignified and stately disasters resulting from too great devotion to the sacred principle of the fenestration of the facade are given over, the sooner we shall arrive at an appropriate style of museum architecture, a style beautiful and practical.

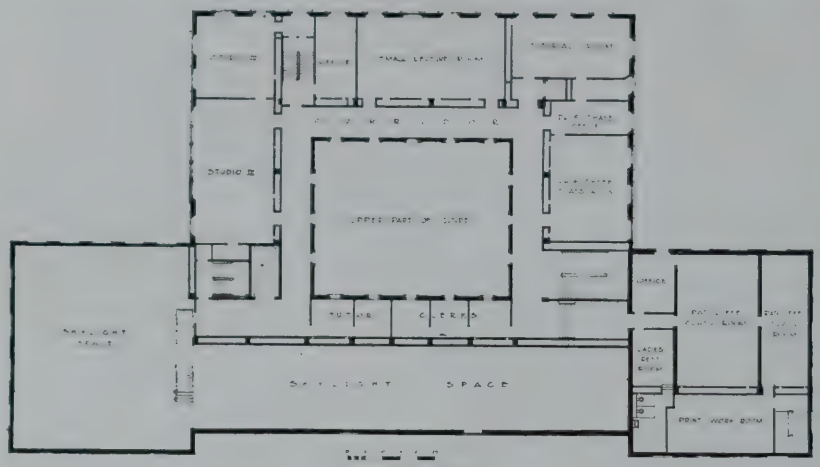
ENTRANCE FRONT

Plans on Back

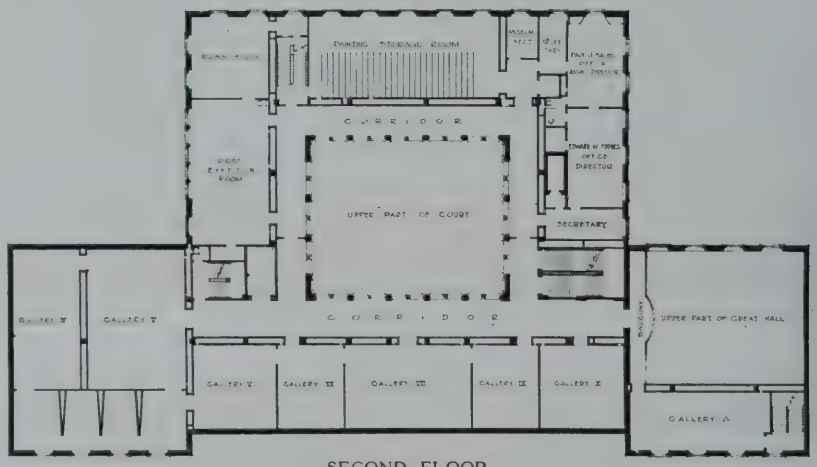
ENCLOSED COURT

NEW FOGG MUSEUM, CAMBRIDGE, MASS.

COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, ARCHITECTS



THIRD FLOOR



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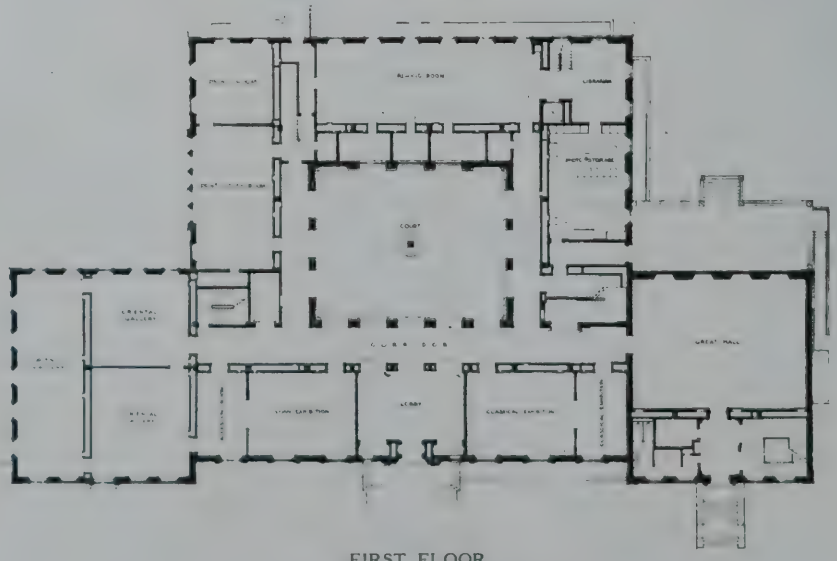


FIRST FLOOR

PLANS, NEW FOGG MUSEUM, CAMBRIDGE, MASS.

COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, ARCHITECTS

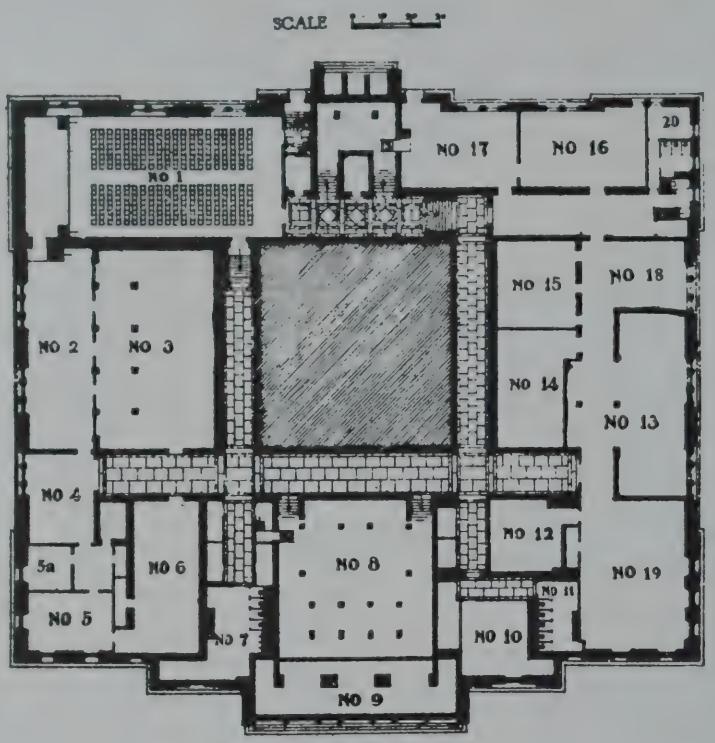
MAIN ELEVATION

Photos. Richard Southall Grant *Plans on Back*

COURT LOGGIA

FREER GALLERY OF ART, WASHINGTON

CHARLES A. PLATT, ARCHITECT



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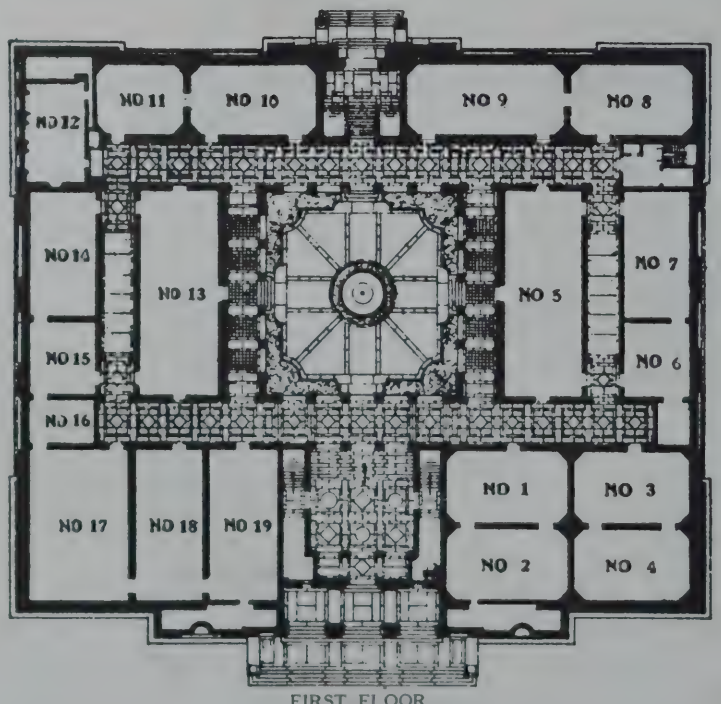


FIRST FLOOR

PLANS, FREER GALLERY OF ART, WASHINGTON

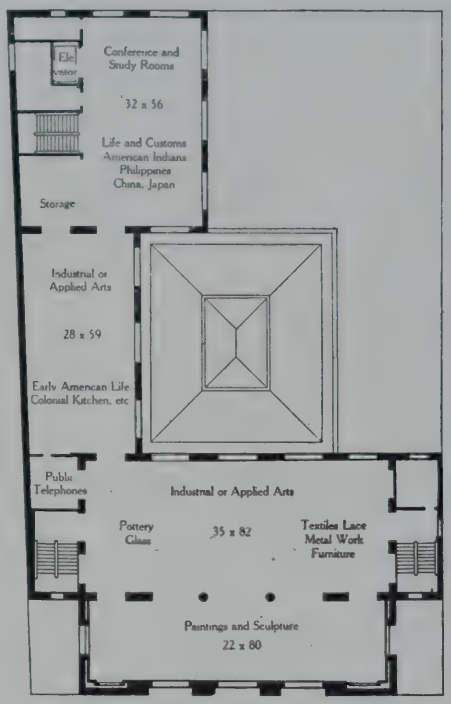
CHARLES A. PLATT, ARCHITECT

MAIN FACADE

CENTRAL COURT

NEWARK MUSEUM

JARVIS HUNT, ARCHITECT



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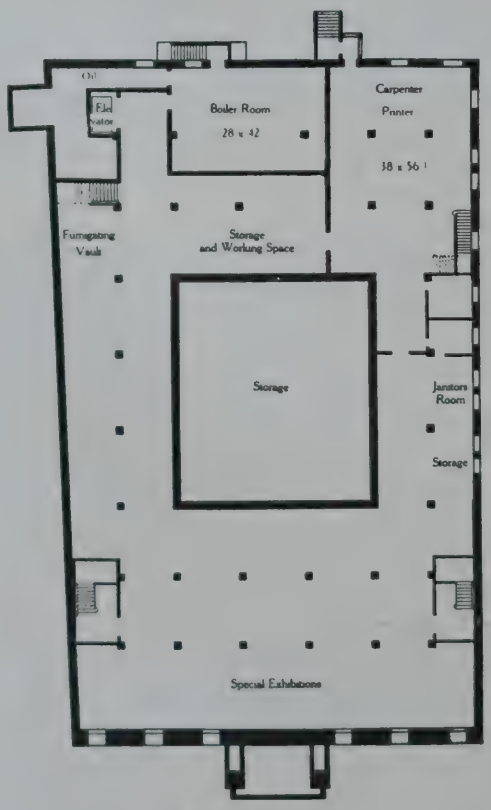


BASEMENT

FIRST FLOOR

PLANS, NEWARK MUSEUM

JARVIS HUNT, ARCHITECT

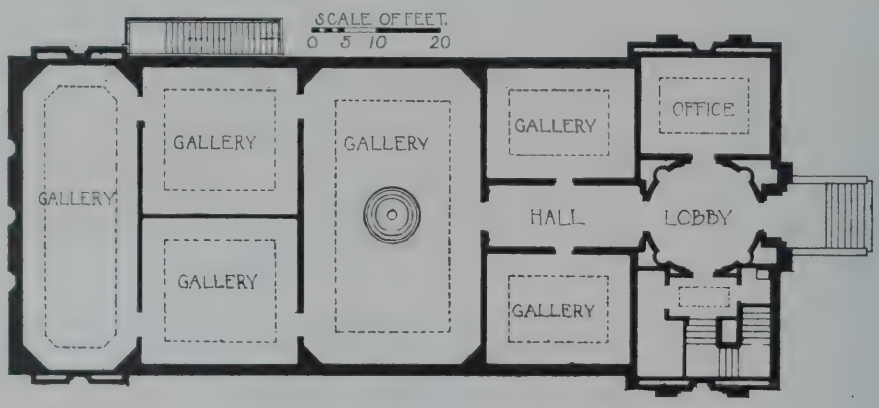
ENTRANCE FRONT

Plan on Back

NORTH GALLERY

HORACE C. HENRY ART GALLERY, SEATTLE

BEBB & GOULD, ARCHITECTS



PLAN, HORACE C. HENRY ART GALLERY, SEATTLE

BEBB & GOULD, ARCHITECTS

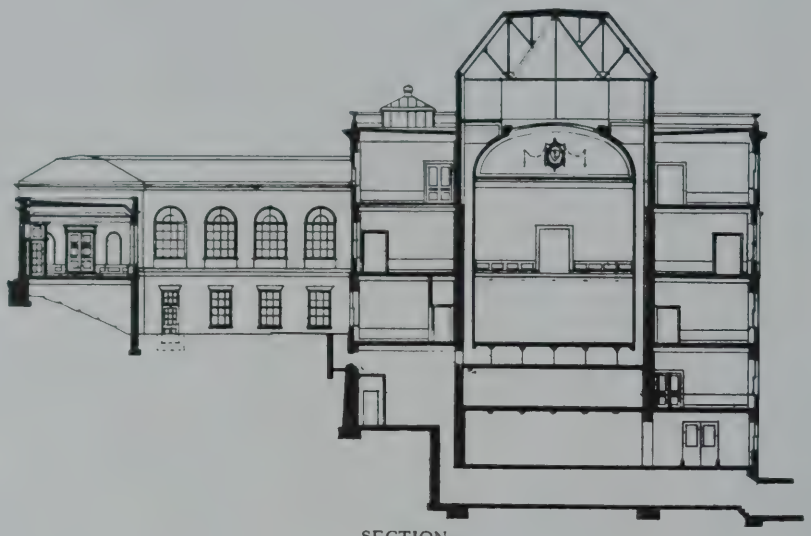
ENTRANCE FRONT

Photos. Paul J. Weber. *Plan and Section on Back*

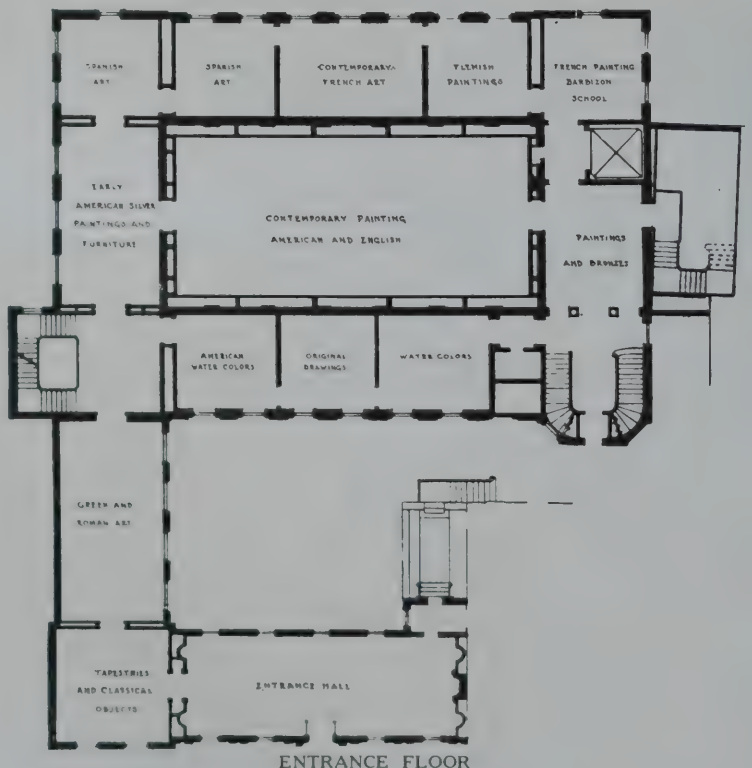
A GALLERY

RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE

WILLIAM T. ALDRICH, ARCHITECT



SECTION



ENTRANCE FLOOR

PLAN, RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE

WILLIAM T. ALDRICH, ARCHITECT

Plan on Back

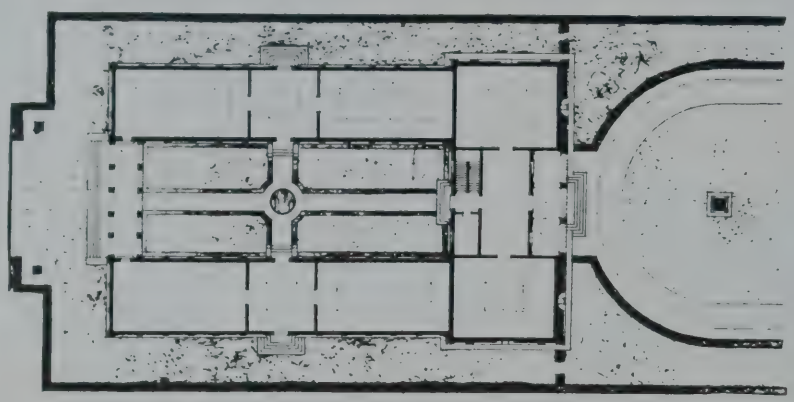
BUTLER ART INSTITUTE, YOUNGSTOWN, O.

McKIM, MEAD & WHITE, ARCHITECTS

Plan on Back

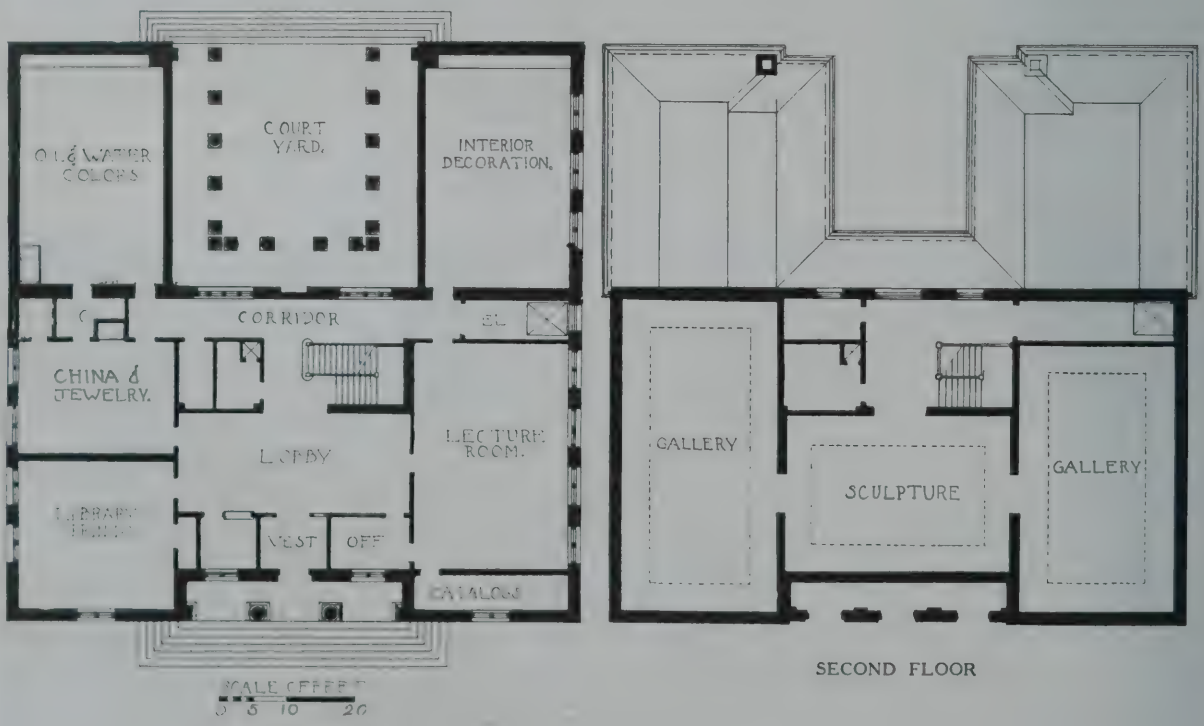
MULVANE ART MUSEUM, TOPEKA

THOMAS W. WILLIAMSON COMPANY, ARCHITECTS



PLAN, BUTLER ART INSTITUTE, YOUNGSTOWN, O.

McKIM, MEAD & WHITE, ARCHITECTS



FIRST FLOOR

SECOND FLOOR

PLANS, MULVANE ART MUSEUM, TOPEKA

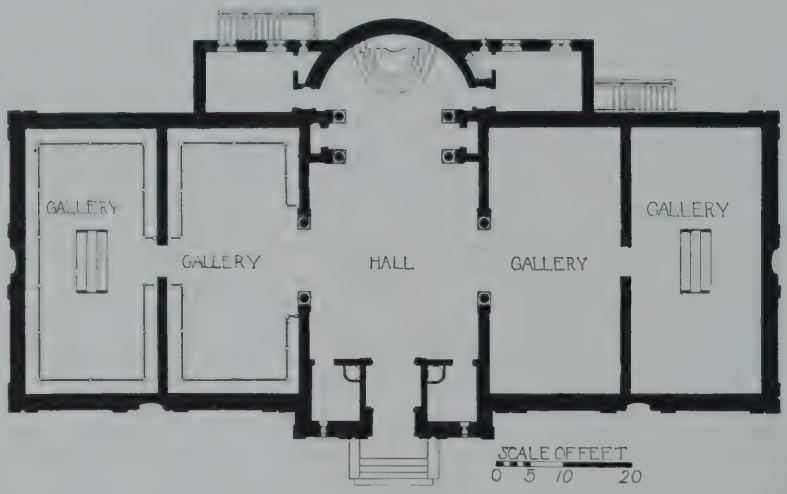
THOMAS W. WILLIAMSON COMPANY, ARCHITECTS

Plan on Back

ART MUSEUM, HECKSCHER PARK, HUNTINGTON, N. Y.
MAYNICKE & FRANKE, ARCHITECTS

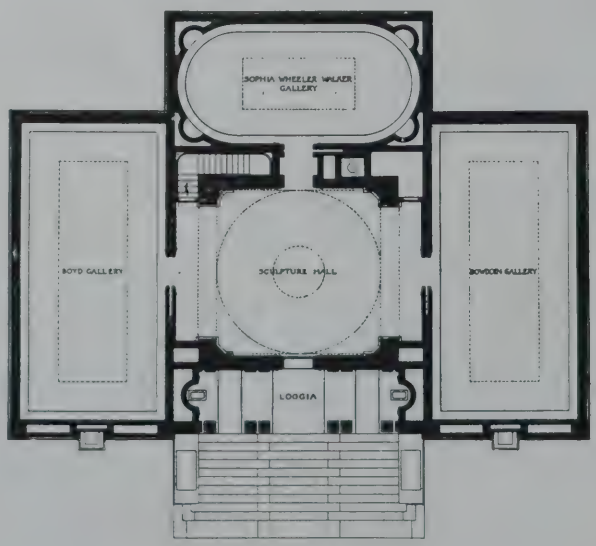
Plan on Back

WALKER ART GALLERY, BRUNSWICK, ME.
McKIM, MEAD & WHITE, ARCHITECTS



PLAN, ART MUSEUM, HECKSCHER PARK, HUNTINGTON, N. Y.

MAYNICKE & FRANKE, ARCHITECTS



PLAN, WALKER ART GALLERY, BRUNSWICK, ME.

McKIM, MEAD & WHITE, ARCHITECTS

ENTRANCE FRONT

PUBLIC LIBRARY

Photos, Hibbard Studio

Plan on Back

LOBBY

WALKER ART GALLERY, MINNEAPOLIS

LONG & THORSHOV, ARCHITECTS

FIRST FLOOR

SECOND FLOOR

PLANS, WALKER ART GALLERY, MINNEAPOLIS

LONG & THORSHOV, ARCHITECTS

Modern Museum Design

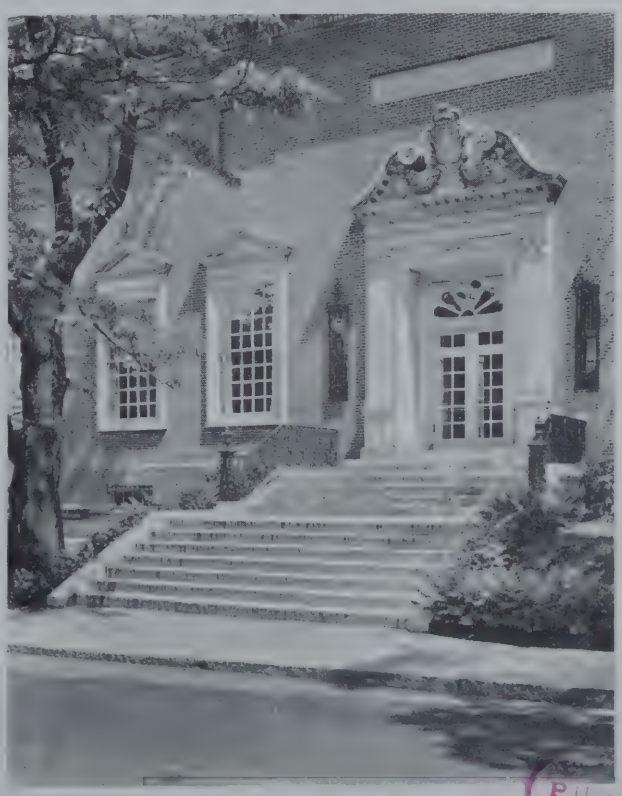
AS ILLUSTRATED BY THE NEW FOGG MUSEUM, HARVARD UNIVERSITY

By MEYRIC R. ROGERS

FOR the past two decades there has been a growing realization, at least among those responsible for museum management, of the fact that the museum *parti,* as ground into members of the architectural profession during their student days, was responsible for a large share of their troubles. The idea of the monumental building,—something that would of itself adorn a municipality and memorialize its creator,—was, however, part and parcel of the professional *credo,* which it required more than vague, indefinite criticism to modify or eliminate. Of course the essential conception,—objects of beauty in a beautiful setting,—is not open to criticism, but the error lay in its interpretation, which emphasized the beautiful setting at the expense of the contents and showed practically no realization of how these contents were to be used thus enshrined.

It is particularly in this last particular that the growth of museum methodology has demonstrated the undesirability of the usual scheme. The nineteenth century and its predecessors, save in a few instances, regarded the museum as a mausoleum,—a casket,—beautiful, if you will, for the preservation of the artistic remains of dead ages. Safekeeping of these remains was the main object. Use was considered secondarily, if considered at all. It is strange how long it remained unrealized that works of art were only worth preserving if they were worth seeing, and that a museum building could rationally justify itself only on the ground that it made works of art easily and pleasantly accessible for inspection and enjoyment. It was, therefore, not long after this theory began to be put into practice by museum managements that the inadequacy and wastefulness of existing buildings became evident, and the battle between the architect and the museum client was commenced. The blame for this misunderstanding cannot however, be laid entirely at the door of the architect. Too often those responsible for new museums were too inarticulate or vague, when questions of structural organization arose, to be of much help, and were often themselves unable to escape from the mortmain of monumental design,—as indeed they sometimes still are. There were advanced, therefore, no cogent arguments which would lead the architect to change his mind and his method of attack.

A complete enumeration of the requirements of the museum as a functional organism would take too much space in this prologue, since most of the essentials will be brought out in later paragraphs. We can proceed on the hypothesis that today a museum cannot be regarded as a beautiful tomb but must be considered as representing an organization with somewhat complex functions, all turning upon the availability and display of its collections. This is the heart of the matter. A museum must be designed from the inside out; in its simplest terms, a museum building is merely an efficient and pleasing background. From this it is easy to see that museum designing requires at least a degree of the technological knowledge that planning of modern hospitals, hotels and business buildings has long demanded. To afford this, it comes as a corollary that museum managements should not only be more explicit as to their requirements, but that they should also appreciate the architectural problems involved, so that their demands may be within the bounds of reason. In this country the fruits of such a realization as the basis for a scientific attack first appeared in the Cleveland Museum, as planned by Hubbell & Benes (Plate 120), and in the new building of the Rhode Island School of Design, by William T. Aldrich (Plate 125). Although somewhat complicated by additional functions necessary for the requirements of a university department, the new Fogg Museum of Harvard University is, perhaps, the most complete as well as the latest result of thoroughgoing coöperation between the architect and museum authorities. At any rate,

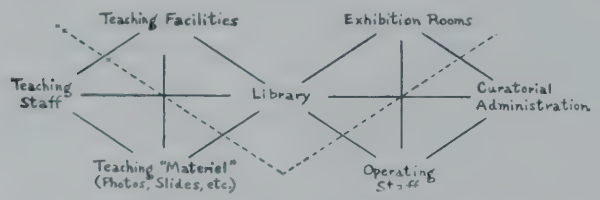


Entrance, New Fogg Museum
Coolidge, Shepley, Bulfinch & Abbott, Architects

The Great Hall, New Fogg Museum

this will serve as a definite instance in which the requirements were explicitly stated and met four-square, with rather interesting results in many ways.

General Layout. The accompanying diagram will serve to bring out both similarities and differences between the simple museum problem and those which were set by the special requirements of the Fogg. In this instance the areas indicated above the dotted lines are considered as being available to the public.



It was taken as a cardinal principle that the building must meet squarely the requirements laid down, and as far as possible express the functions embodied in these requirements, as directly and simply as possible. Any preconceived monumental form was, therefore, rendered impossible. The building that resulted consists of a four-story structure surrounding three sides of an enclosed court, the fourth side being of two stories and extending about half its own length, with a longer and lower facade on the fourth side, which faces the street. The museum portion of the building, being that directly available to the public, finds itself, naturally, in this lower front portion;—that in the rear is devoted partially to space occupied by the teaching departments, though even in this section the first two floors are devoted to purposes which are a necessary part of any museum. The basement and sub-basement furnish in the main space for the workrooms of the operating staff, storage, and the mechanical plant. Only the two upper stories of the rear portion are used entirely for university purposes. It may be seen, then, that in the main, the Fogg Museum offers in its two main floors and basements a solution of the museum problem. It is this that concerns the present article, since it is of broad or general application.

First Floor. At the outset it was considered undesirable that the interior should bear the stamp of any particular architectural style, though in conformity with the exterior treatment, itself determined by surrounding buildings, the architectural detail used would necessarily be of a modified classical character. The most striking feature of the first floor plan,—the central court,—apparently violates this rule of non-stylistic simplicity. As a matter of fact, however, it is the exception that proves the rule, for it was particularly desired that this space should not be used for exhibition purposes, but should be what is known as a "rest area," to which visitors to the museum could constantly repair between periods of concentrated study of the collections. Since the scheme as developed logically called for a court with surrounding corridors, two treatments were possible,—on the one hand an open-air court, made attractive by growing plants, or on the other a glazed-in court, which would have to rely on its architectural treatment for interest. Climatic conditions made the success of the former plan extremely doubtful. The latter scheme, therefore, was adopted. For such a problem, Italian precedent was the obvious thing to follow, and the designers were fortunate enough to find that they could use, practically without change, the two-story arcaded motif designed by Antonio da Sangallo for his house at Montepulciano. This was developed and carried out in the material used in the original (Italian traver-

Gallery VIII, New Fogg Museum

tine) and so serves a secondary purpose as an example to the students of historical architectural excellence. It is hoped that a center fountain will eventually complete the design of the court. The plaster walls and groin vaults of the surrounding corridors have an extremely simple treatment, suggested by the original and quite in harmony with the general scheme of the building. The only other feature of this plan which could in any way be called monumental is the great hall, a two-story room of some 35 x 50 x 28 feet. This was intended to serve a double purpose, first as a gallery where large pieces of woodwork and tapestries could be shown and, second, as a concourse in connection with the lecture hall below. Again the treatment is of extreme simplicity, the walls being of plaster carefully toned and waxed, but having no architectural character except that derived from their proportions. What stylistic character it has is given to it by the sixteenth century French ceiling, which is itself one of the exhibits, installed at the time of the construction.

The remainder of the exhibition space on this floor consists of a series of small galleries, side-lighted, as in the case of the great hall, and intended for the display of the classical collections and for the use of the Oriental Department. Most of the objects in these collections are, of course, three-dimensioned, for which side light is particularly desirable. The average size of the galleries is roughly 25 x 35 or 40 feet. They have a uniform height of 16 feet, and are lighted as far as possible from one side only by large windows reaching from a few inches below the ceiling to about 3 feet above the floor. The quality and quantity of the light admitted are controlled by adjustable opaque shades and by draw curtains of unbleached cotton. While the floors of the court, corridors, and great hall are of flagging, those of the galleries are of broad-board, solid teak left in its natural color and waxed. It is hoped that in the course of time these floors will darken naturally, and that to a large extent the curling consequent upon the dampness present in a new building will eventually straighten out. The galleries have a very simple plaster cornice and a narrow base of dark green terrazzo. Each gallery has a steel hanging rail concealed in the lower member of the cornice, and the walls are finished uniformly in a natural linen laid over waterproof building paper on a nailing surface of two-ply, cross-laid, 7/8-inch spruce, backed in turn by terra cotta. This wall construction affords complete flexibility for installation of works of art and has been used practically throughout the building. The wood backing has been treated with a salt solution for fire protection, but such a precaution is not really necessary, since the material is so compact that combustion is almost impossible. In conformity with the general scheme, the doorways and windows are simple openings without architectural trim. For artificial lighting the simplest possible enclosed bowl fixtures have been used, suspended in single units from the ceiling. Ample opportunity is given for special lighting and emergency use of electric current by numerous base outlets.

From experience so far it would seem that this extremely simple treatment, relying as it does upon good proportions and pleasant tones, is most satisfactory for the usual small gallery. The rooms used by the Department of Prints on the same floor are treated in a similar manner and have proved to be eminently satisfactory. The special nature of the problem necessitated for the library and its adjuncts a much greater space than would ordinarily have

Gallery, Freer Gallery of Art, Washington
Charles A. Platt, Architect

been required in a museum of this size. In this instance special provision had to be made for use of this section of the building when the rest of the museum would be closed to the students and public, and facilities had to be afforded for large stack space and ample room for the cataloguing service. Furniture of the simplest possible type of natural oak, and tinted plaster walls, have proved satisfactory. For aiding study, different floor materials have been used, in both the print room and the library, from those used in the galleries. The floors of the print rooms are of fumed oak, and cork tile has been used in the library, and use of these materials is successful.

Second Floor. In the conventional museum scheme, derived as it is from the European palace, the second floor is usually given preëminence, and the fact is advertised by the use of a monumental staircase which faces the visitor immediately upon entering the building. In this particular instance, however, the two floors are of equal importance, and the stairway, so likely to inflict the visitor immediately with the anticipatory pains of muscular effort, has been relegated to a corner position where it is convenient but not conspicuous. Besides the main staircase for public use there are the service stairs in connection with the freight elevator, and an emergency stairway in the rear of the building. An automatic passenger elevator is also provided for the convenience of the staff and for the aged and infirm among the public. The second floor arrangement is essentially similar to that of the lower floor, where also the exhibition unit is considered to be the gallery and its adjacent corridor. This unit makes is possible to isolate any gallery without affecting the general circulation, and where the exigencies of the plan make its use impossible, the galleries have been so arranged that isolation is still obtainable. The finish of these corridors, in conformity with those on the first floor, is of plaster, but the floors are of reddish brown matt-glazed tile. The exhibition galleries correspond in size to those on the lower floor, and are for the most part top-lighted for the exhibition of paintings and prints.

Gallery Lighting. Top lighting, though rather expensive in construction and open to many objections, still seems to be the best method of lighting picture galleries. It is economical of wall space and is capable of giving equal light on all four walls as well as admitting the greatest possible amount of light. Clerestory lighting, which is a compromise between top lighting and side lighting, is practically impossible of application in small galleries, since it necessitates a disproportionate height and does not offer enough advantages in compensation. Monitor lighting has the disadvantage of eliminating by its very structure most of the light available, and in small rooms it creates an unpleasant appearance. By a process of elimination alone use of the skylight and flat sub-skylight holds the field. It has the great disadvantage of creating down glare and a tendency to throw most of the light upon the floor instead of upon the walls. A great deal of thought was given to this subject in connection with the Fogg, and all available experimental data were used in determining the exact method to be adopted in the treatment of the problem. As determined finally, the sub-skylights, some 15 feet from the floor, occupy practically the entire ceiling area, coming to within 18 inches of the walls. To get as even an illumination as possible, the diffusing chamber between the sky-

Addition to Memorial Art Gallery, Rochester
McKim, Mead & White, Architects

light and sub-skylight was made almost equal in height to the gallery proper, reckoning from the peak of the outer skylight. The glass used in the sub-skylight is plain white, hammered and wired plate, but the central panels have been acid ground to increase the diffusion and to lessen the vertical component. This in theory and in practice tends to equalize the light on floor and walls. Further adjustable control is given by the use of a louver system following the slope of the upper skylight. These louvers are of cloth and are operated by hand control from the gallery floor. The louvers govern the admission of direct sunlight and also tend to equalize the light on opposite walls. Unfortunately, the run of the galleries north and south somewhat lessens the effectiveness of this louver system, but any adjustment which tended to be more efficient in sunlight control tended to upset its equalizing qualities. The result is very satisfactory, since in spite of much greater illumination there is less glare than is usually found in the top-lighted gallery with deep coves. The interior finish of these galleries is the same in every practical respect as in those below.

Besides these top-lighted galleries, several small side-lighted rooms were devised for the exhibition of prints and drawings. Small cabinets offer the best background for small-scaled objects of this sort. These cabinets are arranged as a series of alcoves, their side walls canted to catch more directly the light from the windows. Artificial lighting in these alcoves is of the direct ceiling type, but in the top-lighted galleries the fixtures are installed above the sub-skylight. Considerable difficulty was encountered here because of the variation in the diffusing power of the sub-skylight glass, but it has been found that shadows are eliminated and an even light obtained when the fixtures are bunched directly above the center diffusing panel. Before leaving this subject, it should be noted as highly desirable that when such galleries are designed the diffusing spaces between the two skylights should be kept as open and free of structural members as possible, at least for a space of 6 feet above the skylight. This will result in economies in the upkeep of the museum as well as in greater flexibility in the installation of equipment. Self-supporting skylights of steel are desirable.

Unique Storage Facilities. A feature that is new in museum design is the placing of the picture storage rooms on the same floor as the exhibition galleries. This, while seemingly using valuable space for secondary purposes, has the great advantage of making those paintings not on exhibition readily and easily available for study under conditions largely similar to those afforded by the galleries. The storage of paintings in a basement without daylight is bad for the paintings as well as being a somewhat ignominious treatment for worthy works of art. This "painting study room," as it is called in preference to "storage," is equipped with a series of sliding screens of heavy wire mesh which convert the room into what is really a gigantic vertical file. The screens are supported from the ceiling on a double trolley, which prevents side swinging and makes it unnecessary to cut up the floor with rails. The appearance of this installation can be judged well from one of the accompanying illustrations (page 559). It is intended that this room should be kept in order and that it should be as pleasant a place as the galleries themselves. The room is, of course, equipped with the same facilities for heating, ventilating and

Photos, Paul J. Weber

DOORWAY DETAIL

MUSEUM OF THE RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE

WILLIAM T. ALDRICH, ARCHITECT

MAIN ENTRANCE
MUSEUM OF THE RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE
WILLIAM T. ALDRICH, ARCHITECT

humidifying as are the galleries. The third and fourth floors are specially designed for use of the teaching staff's university department, and are not vital parts of the museum itself; though the space furnished by a third floor would be useful for workrooms and additional offices in any art museum.

The Basement. With the exception of the areas occupied by library stacks and cataloguing room, the basement was designed mainly with the museum functions of the building in mind. A wide drive from the street gives access to the receiving room on the north side. The receiving room, occupied mainly with the receipt and shipping of works of art, is in direct connection with a room for packing and with the offices of the superintendent and registrar, the main storage space, and the freight elevator. A height of 12 feet in the clear has been kept throughout these areas, which are separated from one another by large double sliding fire doors. The walls are of hard plaster, and the granolithic floors are treated with a dust preventative. A large vault has been provided in connection with the main storage area, and it is needless to say that the latter can never be too large. Besides these facilities, the basement offers a special storage room, study room and curator's office for the Oriental Department, a grouping particularly useful in the design of a departmentalized museum. In addition to these services there are additional work- or classrooms and a darkroom and a workroom for a photographer. It is still a moot question whether daylight is necessary in this latter case. The public lavatories are also on this floor, connecting with the main circulation areas as well as with the lobby of the main lecture room, which is situated below the great hall.

The Lecture Room. It should be noted that the lecture room, where artificial light is all that is necessary, though daylight has been provided, can be opened to the public at times when the rest of the museum is closed. It has a separate entrance from the street which is also in direct connection with the great hall which can be used either with it or not at will. This feature, of course, is important in a university building, but it is even more valuable in the case of an ordinary museum plan, since many public lectures are given in the evenings when the galleries are closed. The lecture room seats about 400 and is equipped with projecting apparatus which makes it possible to throw two pictures side by side on the screen for purposes of comparative study. The floor of the lecture room is of cork tile, and it has an average slope of 1 foot in 20. The lecture platform is raised only about a foot above the floor and is in the form of a shallow recessed stage about 9 feet deep. The back of the stage, finished in plaster, is left unpainted to serve directly as a screen for the stereopticon. The lecture room walls are of plaster of medium density, and the ceiling, which is treated with shallow coffers, is partly of sound-absorbent plaster. The room is lighted by nine single direct units with dimmer attachments. Each unit has a parchment shade specially designed to eliminate side glare and to furnish sufficient direct downward light for note taking.

Gallery, Cleveland Museum of Art
Hubbell & Benes, Architects

The Exterior. The exterior of the building developed directly from the fulfillment of plan requirements and, as such, offered a very difficult problem to the architects; since the solution had to conform with the accepted Georgian Colonial of the surrounding buildings. Use of the materials, brick with limestone trim, was dictated both by this and by questions of cost which, unfortunately, also made it necessary that most of the window trim be of wood rather than of stone. The architects met this problem, as well as many others, in an exceedingly able fashion, for though the resulting facades may be open to certain architectural criticisms from an *a priori* angle, no pretense was made of doing anything more than directly expressing what plan and section required. The effect, without and within, depends upon simplicity and on the qualities derived from studied proportions, careful fenestration, and an appropriate treatment of textures. The building is well within the well known "Harvard tradition." It is in architectural accord with the oldest of the Harvard buildings, not far away, as well as in agreement with most of those built at different periods later.

Editor's Note. In addition to being associated with Coolidge, Shepley, Bulfinch & Abbott as Consulting Architect in designing and planning the Fogg Museum, Mr. Rogers was Associate Professor of Fine Arts at Harvard. He was formerly a member of the staff of the Metropolitan Museum, and now has become Director of the Baltimore Museum of Art.

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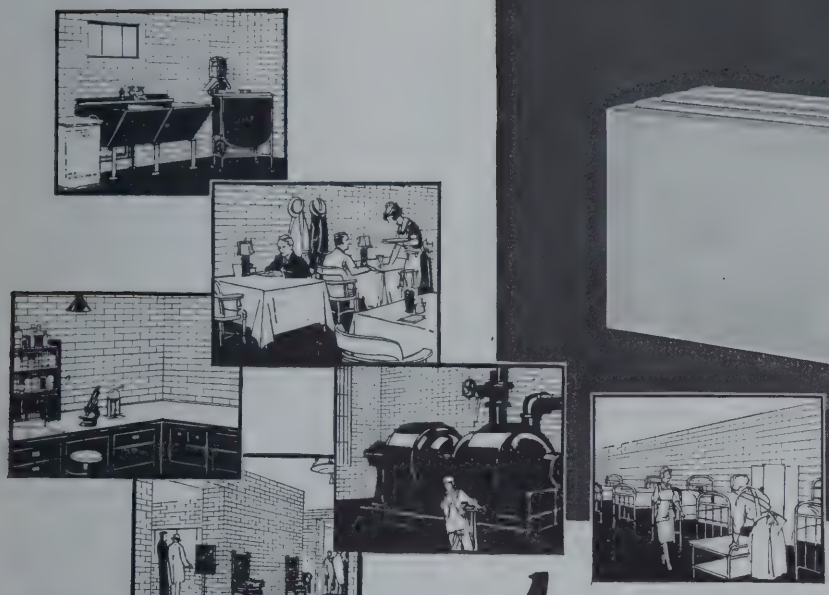

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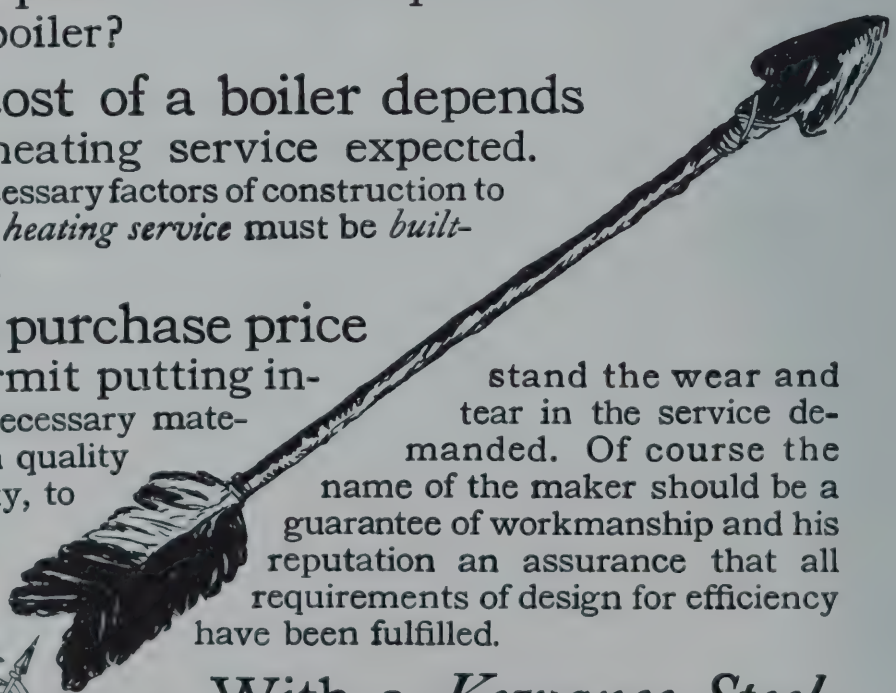

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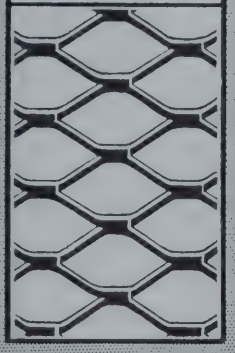

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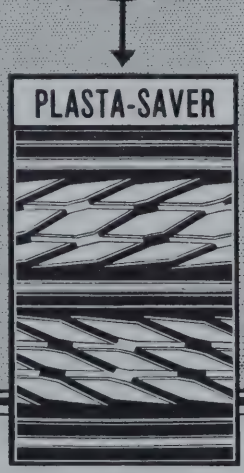

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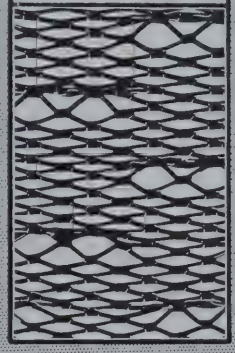

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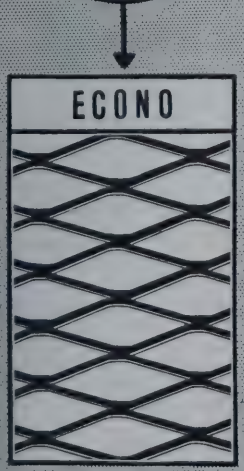

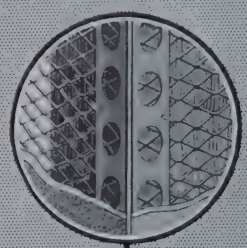

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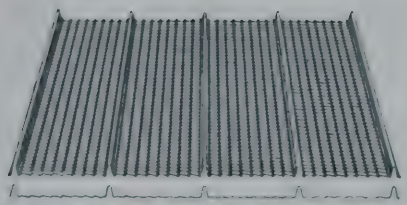

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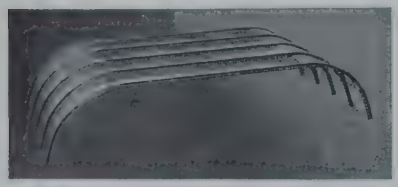

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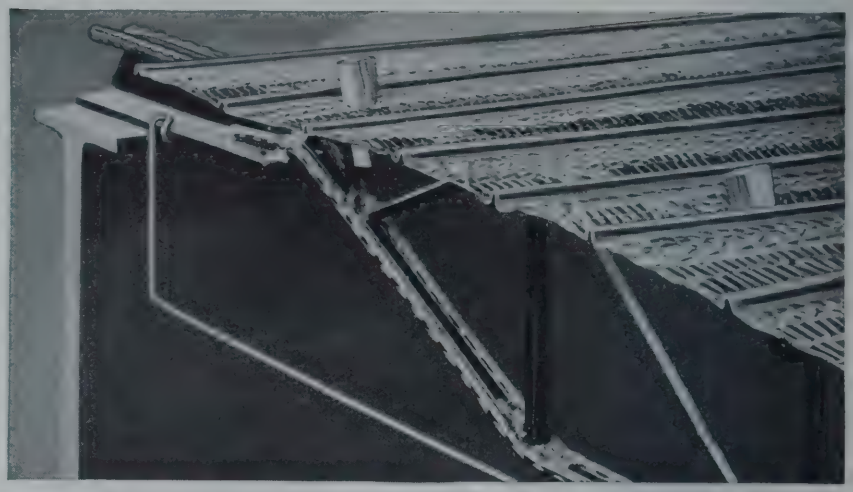

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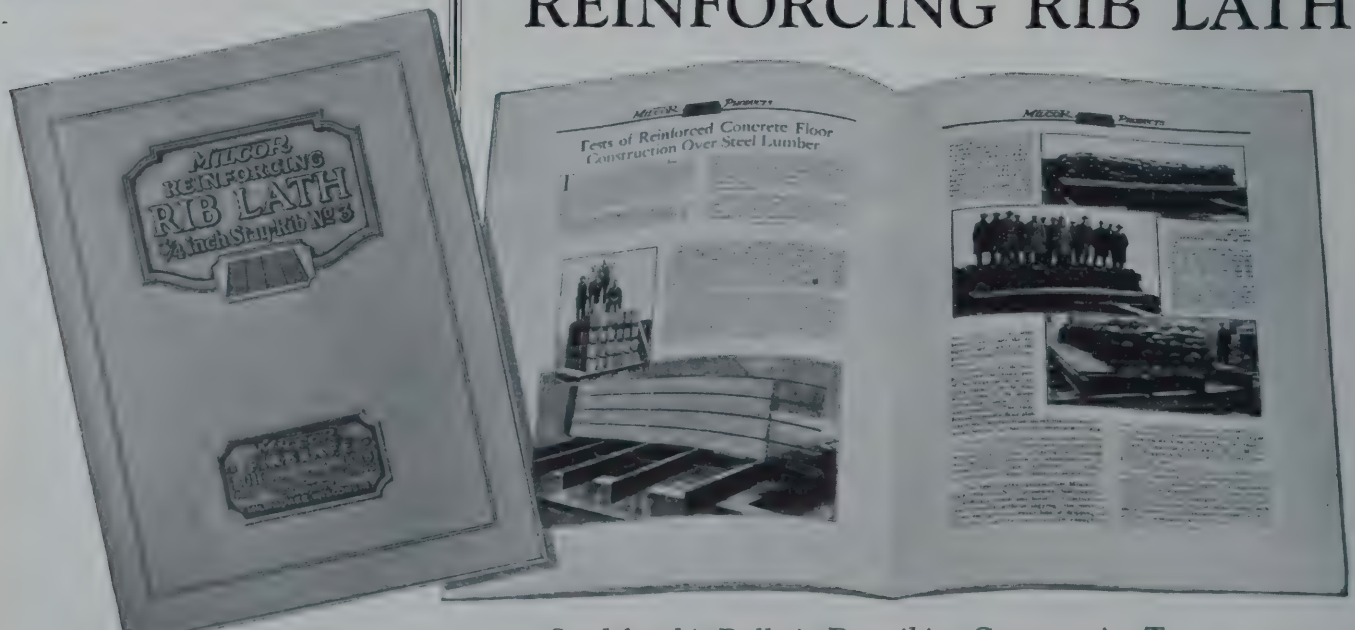

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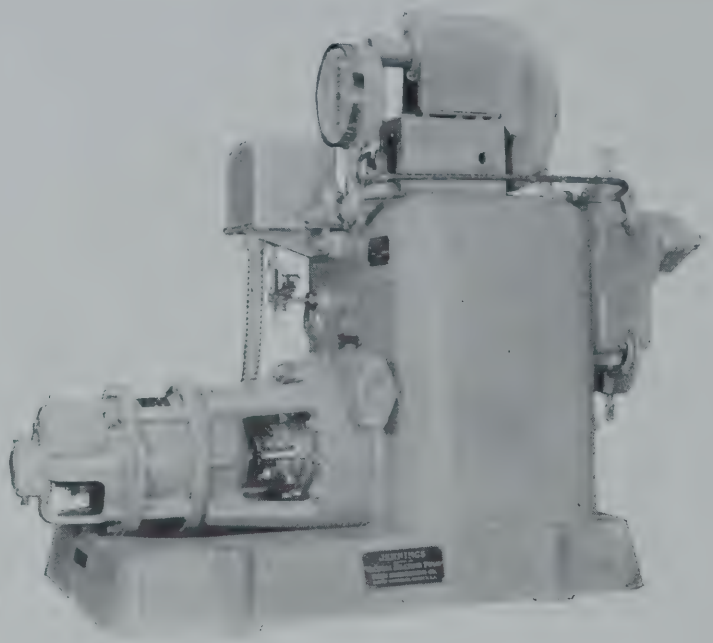

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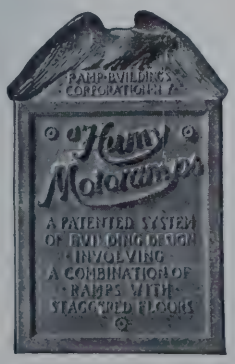

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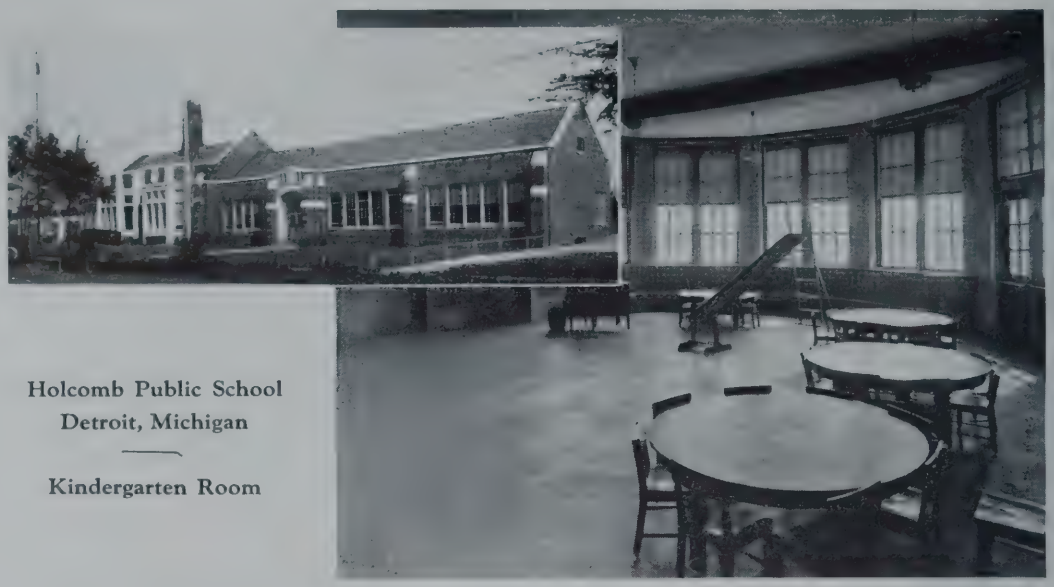

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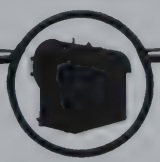

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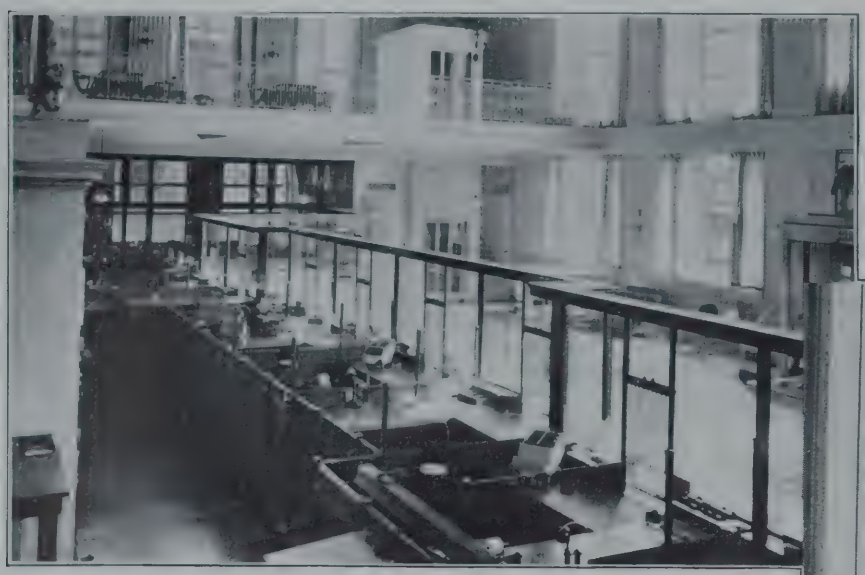
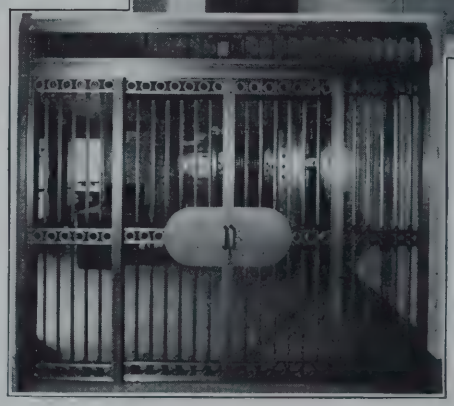


The Low Cage Partitions, of metal and plate glass, Bookkeepers' Desks, Wickets and Counters, in the Bank of Charleroi and Trust Co., Charleroi, Pa., give an idea of the diversity of Art Metal equipment for bank interiors.

This massive and beautiful main entrance door of the same Charleroi bank is a fine example of Art Metal craftsmanship. No delicacy of proportion has been sacrificed in its heavy cast bronze construction. Hopkins and Dentz, New York City, Architects.

TRANSLATING YOUR BLUEPRINTS *INTO* LIVING METAL

Art Metal master craftsmen bring out all *the beauty of your design*



The dignified beauty of this vault screen in the Bank of Charleroi and Trust Co., is the result of practical application of the architect's design in imperishable bronze.

TO give your design concrete expression calls for high artistry. This, Art Metal does with arresting beauty—beauty inspired by the old master metal workers. Such craftsmanship overlooks no detail. The exact effect you planned is produced without the minutest variation.

For over thirty-eight years Art Metal has been working with this ideal—careful skill speeded on the wings of modern production. The result is metal equipment that gratifies the eye while conforming to the requirements of everyday work.

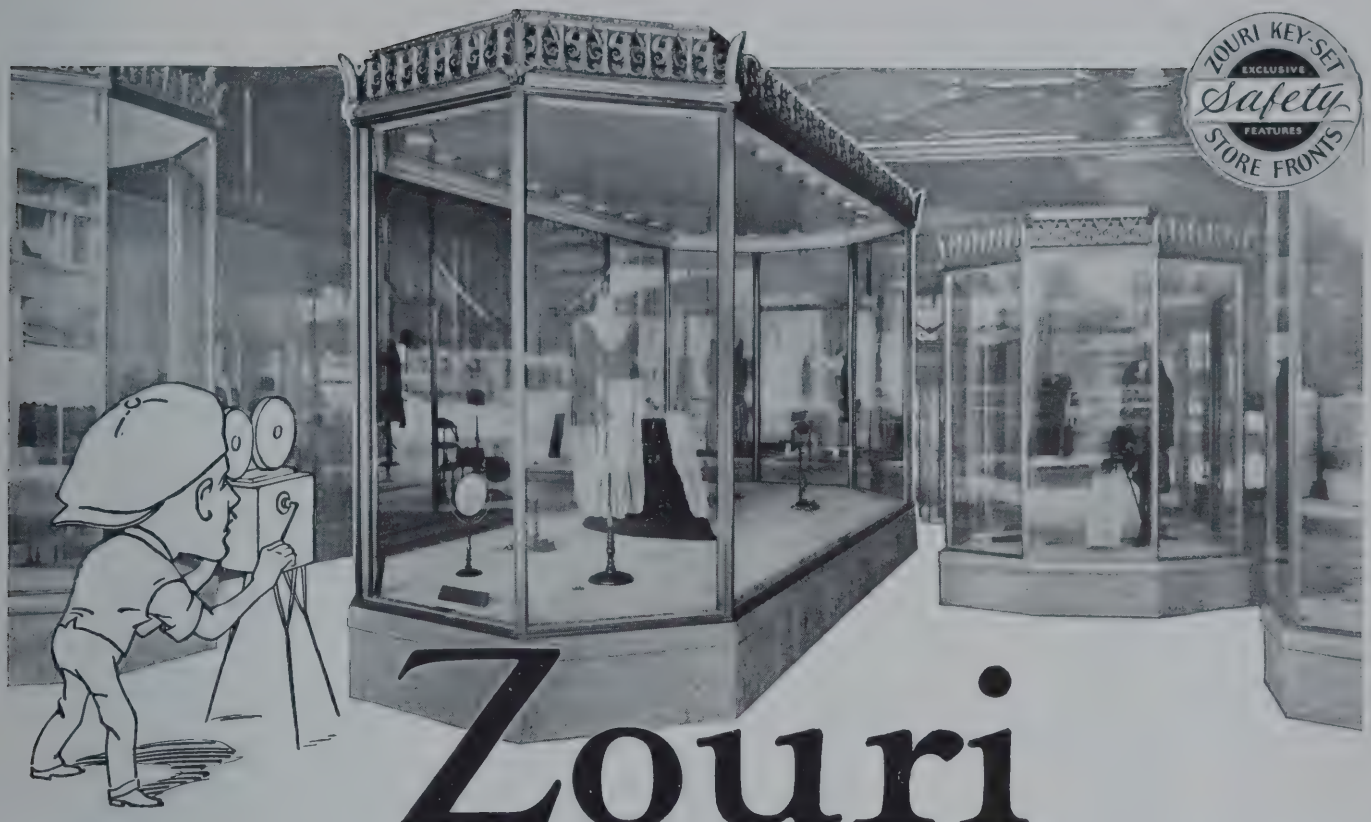
This is especially valuable to the architect of banks and public buildings. His design takes practical form in living metal. And Art Metal equipment, in bronze and steel, can fill the most diversified specifications.

To Art Metal, every job is an individual problem. Art Metal service stands ready to co-operate with you in every way—to execute your conception with beauty and economy. A letter will bring an experienced representative. This places you under no obligation. Write NOW.

Art Metal

JAMESTOWN - NEW YORK

BRONZE AND STEEL INTERIOR EQUIPMENT FOR BANKS LIBRARIES AND PUBLIC BUILDINGS • • • HOLLOW METAL DOORS AND TRIM



Zouri

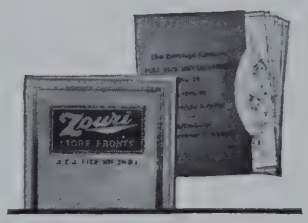
features your client's merchandise

From a profitable standpoint alone, you may recommend Zouri Key-Set Sash and Store Front construction. You have minimum worry over possible installation "accidents"—your client, thanks to the famous Zouri distribution of setting pressure along a patented gutter, will find next to no distortion of the window frame, thereby assuring him safety from breakage due to wind, shock or setting.

Years of service under all sorts of adverse conditions, make Zouri the outstanding choice of those designers who build for permanence and beauty. Zouri store front installations—the above Los Angeles department store is typical—feature the merchandise inside, providing a dignified, lasting and safe frame for stocks on display.

Copper or bronze of unusually heavy gauge is used in the fabrication of Zouri sections—gauges that experience proves are necessary. After specifying, Architect and Contractor in considering substitutions should demand samples.

Our nation-wide corps of Zouri distributors—the largest in the field—is equipped to render intelligent cooperation from shop to skyscraper. Let them help YOU.



Send for this data book and helpful detail sheets

Written for the practical architect, builder and contractor, this material gives generous plans and diagrams for suggested methods of window and display space. Detailed drawings will prove helpful to specification writers. Valuable to keep on file. Send for your copy.

Zouri Drawn Metals Company

And Associated Companies:

Distributors in Principal Cities

INTERNATIONAL STORE FRONT COMPANY
STANDARD STORE FRONT CONSTRUCTION CO.
MODERN BRONZE STORE FRONT COMPANY
ZOURI COMPANY OF CALIFORNIA
ZOURI DRAWN METALS CO. OF NEW YORK, INC.

Names on Request

Factory and General Offices: Chicago Heights, Illinois

TECHNIQUES

Fine Line Technique

THE above pen and ink drawing, extremely light in feeling, is a direct opposite to the thick-lined, heavily shadowed type of technique seen so frequently and illustrated in this series of advertisements but a short time ago. It represents still another variation of the ever-interesting Black-and-White handling which Higgins' American India Ink makes possible.

Such light treatment—such delicacy—owes its effect partly to the thinness of the lines, whether they be in long, sweeping strokes, short ones or cross hatch—and partly to the white space or board intervening between the lines. The subject above has been especially selected to give this light, airy feeling.

Detail may also be included if the requirements dictate and if it is not too heavy, though this treatment serves better when imaginative areas are to be created.

Equally effective for this delicate technique are Higgins' General (Soluble) and Higgins' Waterproof Black Drawing Inks. You may obtain either as well as any of the 11 brilliant Higgins' Colored Drawing Inks at your regular supply dealer's.

"Techniques" an extensive new handbook just off the press, shows a number of exceptionally artistic treatments which are made possible through the use of Higgins' American Drawing Inks. Send for it.

CHAS. M. HIGGINS & CO.
271 Ninth St., Brooklyn, N. Y.

HIGGINS' Drawing Ink

Beaver's
increasing popularity a tribute to quality

The ever-increasing recognition of Beaver American Plaster is an unmistakable tribute to its unvarying good quality.

Each year, for many years, Beaver has been chosen by America's most discriminating architects and builders for their finest building operations.

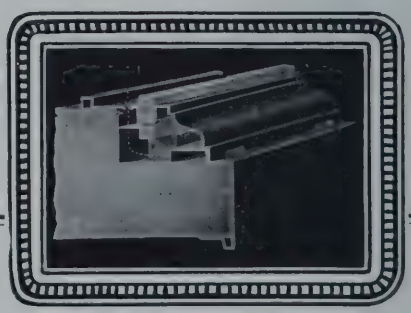
They choose Beaver chiefly perhaps because it never fails adequately to express the architect's artistic wall conceptions.

Those who have not experienced the satisfaction to be found in using Beaver American will be interested in new informative literature recently prepared.

THE BEAVER PRODUCTS CO., Inc.
Dept. 1811 Buffalo, N. Y.

BEAVER
AMERICAN
PLASTER

1812



Get These Samples for Examination

If you will compare Brasco patented features with other store front constructions, you will easily see why it offers the highest value—in strength, glass safety, ease and economy of installation, permanent beauty. Brasco covers every store front need at moderate cost—a complete, unified system used by the country's best architects and business concerns. *Samples, catalogs, details free on request.*

Brasco Manufacturing Company
5031 Wabash Ave., Chicago
Eastern Sales Office and Warehouse
28-14 Wilbur Ave., Long Island City, N. Y.

Brasco
COPPER STORE FRONTS

WHEN Earl Horter made this delightful sketch of Castle Hill, Old Edinburgh, he used Dixon's Eldorado Pencil. He knew by years of experience that no pencil could equal the superb qualities of Dixon's Eldorado—"The master drawing pencil."

And Earl Horter is not alone in this preference. Leading artists, architects and draftsmen everywhere specify this famous American-made pencil for their work.

DIXON'S
ELDORADO
"the master drawing pencil"

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 224-J, Jersey City, N. J.

SAMPLE OFFER—Write for full-length free samples of "*The master drawing pencil*" and of Dixon's Thin-Ex Colored Pencils. Because they have a thin colored lead of great strength and brilliance, Dixon's Thin-Ex Pencils are unequaled for thin line marking.

1827 THE HUNDREDTH YEAR OF DIXON SERVICE 1927

CONSUMERS POWER COMPANY BUILDING AT JACKSON, MICHIGAN

KOSMORTAR

THE beauty and restraint of classic lines mark the structures that house American business today. Architectural skill has eliminated waste space, bad lighting and egregious decoration. Modern buildings show efficient arrangement, tasteful design and cheerful interiors. They are more comfortable to work in, and more profitable to own.

Ever working towards the affinity of beauty, utility and permanence, it is not surprising to learn that architects like Kosmortar, and specify it in increasing quantity.

Kosmortarassures uniform mortar strength and quality. It is a manufactured product and its ingredients are controlled scientifically. Only sand and water are needed to complete the mix. Kosmortar is plastic; spreads easily; does not drag; cuts clean at joints; is practically water-proof and rarely demands retempering. It saves time, saves labor, saves money. Specify Kosmortar. *The Ideal Cement for Masonry.*

KOSMOS PORTLAND CEMENT CO., *Incorporated*, Kosmosdale, Ky., Sales Offices, Louisville.

ALBERT KAHN, *Architect*, Detroit, Michigan, ROBERT LAKE CO., *Dealers*, Jackson, Michigan,
HENRY VANVERHORST, *Contractor*, Kalamazoo, Michigan.

THE IDEAL CEMENT FOR MASONRY

KOSMORTAR KOSMOS

Detroit Receiving Hospital Selected Castle Sterilizers for Merit and Service

This large institution selected Castle equipment for its quality, and for the service this company renders.

One hospital telling another of this merit has resulted in the largest increase in sterilizer business ever recorded.

Competent advice will be given willingly on complete installation, rearrangement or additions.

CASTLE

The technique of Exact Sterilization, a non advertising treatise in 5 sections, is a valuable help in your surgery. Free on request.

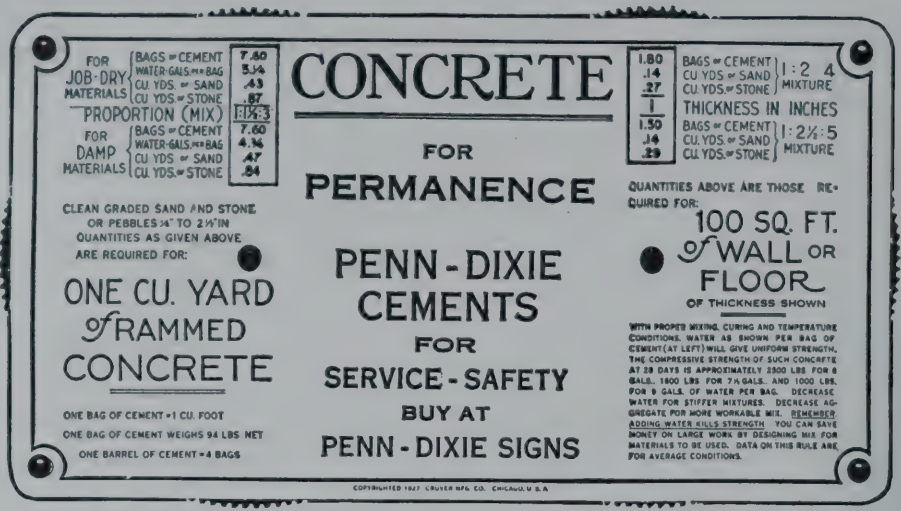
WILMOT CASTLE COMPANY 1209 University Ave. ROCHESTER, NEW YORK

Sterilizers for Hospitals, Physicians, and Dentists

CASTLE

FOR FREE BOOKLETS ON STERILIZING TECHNIQUE — FILL AND MAIL TODAY

NAME..... ADDRESS.....



Actual Size Reproduction of Concrete and Lumber Scale

ASK FOR ONE—THERE IS NO CHARGE

PENNSYLVANIA-DIXIE CEMENT CORPORATION

131 EAST 46TH STREET
NEW YORK CITY

JAMES BUILDING
CHATTANOOGA, TENN.

Offices and Sales Representatives Throughout the East and South

12 reasons why-- Solvay Saves Time and Money in Concrete Construction

This is one of the many buildings where Solvay gives perfect satisfaction

Commonwealth Atlantic National Bank Building Post Office Square, Boston, Mass. Builders: Geo. W. Harvey, Boston, Mass.

1. Lowers freezing point of the mix.
2. Causes concrete to set in half the usual time.
3. Produces a "fatty" mix.
4. Gives 7-day strength in 48 hours.
5. Increases strength of final set.
6. Densifies concrete—increases resistance to dusting.
7. Produces smooth waterproof surface.
8. Sets at bottom as fast as at top.
9. Helps concrete resist wear, acids, and alkalies.
10. Used by common labor.
11. Use with any brand of cement.
12. 75 shipping points—one near you.

Write for Booklet No. 9453 and Nearest Shipping Point

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

10 Rector Street, New York City

SOLVAY
CALCIUM CHLORIDE

"GUNITE" STUCCO
at
Montauk Beach, Long Island, N. Y.

The use of "Gunite" Stucco on the walls of the workingmen's houses on the Carl Fisher Development at Montauk Beach, N.Y., Designed by Robert Tappan, Architect, insures permanent weatherproof and fire-resisting results.

"Gunite" Stucco can be used over any base. Architectural details are accentuated, economies are effected in first cost and maintenance cost reduced to a minimum. Any desired finish can be obtained.

The "Cement-Gun" is not restricted in use. It can be purchased and used by anyone.

Our Contract Department will also estimate on stucco or other "Cement-Gun" work.

Full information will be sent on request.

CEMENT-GUN CO., Inc.
ALLENTOWN, PA.

Announcing

FIRST completely equipped metal covered porcelain enamel finished boiler at Popular Prices!

The New IDEAL Sectional BOILER

A New Day of Usefulness for the Cellar

OVER three billion dollars is invested in wasted cellar space, and over three hundred million dollars is being spent annually for cellar construction in American homes—and most of this space is wasted.

That is why we have developed the beautiful New Ideal Sectional Boiler. In addition to giving everything desired in heating, it is so clean and attractive that it allows the cellar to be converted into a truly useful, livable addition to the home.

The jacket of this boiler is in beautiful red enamel. Doors and plate work are finished in black porcelain enamel. The construction throughout is gas tight, insuring cleanliness of operation. The boiler is highly efficient, completely equipped in every respect, and is thoroughly and indestructibly insulated.

And, *it costs no more than ordinary equipment.*

Complete in Every Respect

1. Perfected Design—Highly Efficient.
2. Thoroughly and indestructibly insulated.
3. Completely equipped—*water and steam boilers*—with mechanical regulation and all accessories.
4. All doors porcelain enamel finish—Permanently beautiful.

AMERICAN RADIATOR COMPANY

AMERICAN RADIATOR COMPANY, 40 West 40th Street, New York City 7-2

Please send me complete information about the New Ideal Sectional Boiler.

Name_____

Address_____

In Buildings That Throughout

You Find—

TRADE MARK · REGISTERED

Compound KEY-VENEERED DOORS

In Chicago's new State Bank Building, every visible specification must meet two qualifications—beauty and durability. Outside, sturdy walls of quarried stone stand to delight the eye and defy the elements. Inside, Compound Doors perform a most important decorative function, and vie with the stone in lastingness.

For Compound Doors are built to last. Their choice sawn veneers are made part of the laminated soft wood core by tongue-and-groove construction. Doubled gluing surface, a high grade of moisture-proof glue, and the shearing resistance of key-veneering, greatly multiply their strength.

When you are looking for a door that can stand abnormal strain, remember that Compound's endurance has been proved through over 30 years of strenuous service.

Cross-sectional sample of Compound construction, showing 3/16 inch sawn veneer tongue-and-grooved to core.

Full information about either Compound Doors or Pyrono Doors sent on request. Their low cost will surprise you. Write.

THE COMPOUND & ST. JOSEPH

AMERICA'S OLDEST VENEERED

Retain Their Beauty the Years

and—

Py-ro-no

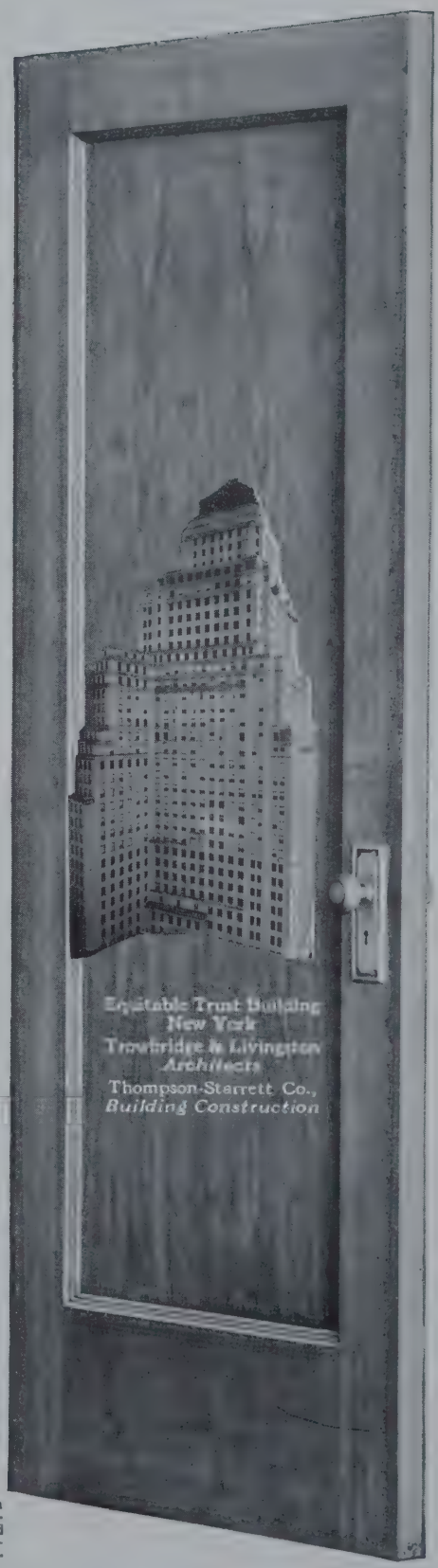
TRADE MARK REGISTERED

ASBESTOS-INTERLINED DOORS

Where fire-proofing restrictions enter into the architect's problem of beautifying a building's interior, he must have a door that adds to long life and beauty an extraordinary degree of fire resistance. Pyrono Fireproof Doors have been chosen for this reason to stand in the new Equitable Trust Building, New York City.

Pyrono Doors have all the advantages of real wood doors, without the drawbacks. They have the beauty of inimitable wood grains. They can be easily fitted. They have stamina that an inseparable bond of veneer and core gives to them.

Above all, Pyrono is a positive barrier to fire. The asbestos-sheathing that surrounds the core is impregnable. This has been proved not only under the intense heat of the blow-torch when tested an hour or more, but in actual fires, one lasting seven hours which left a Pyrono Fireproof Door unblistered on the side removed from the flames.

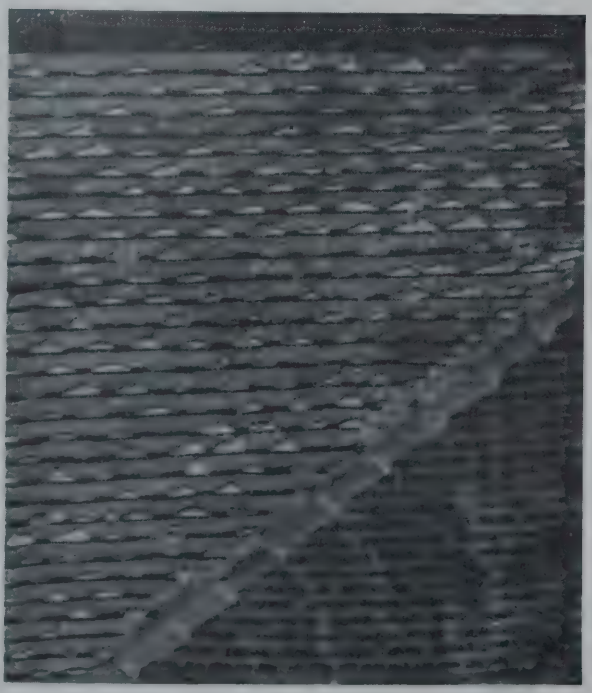


Pyrono construction magnified, the asbestos sheathing indented into core and crossbanded surface veneers applied over it.

PYRONO DOOR CO.
MICHIGAN

D O O R S P E C I A L I S T S

Country Home—Harry F. Guggenheim, Port Washington, L. I. Polhemus & Coffin, *Architects*, Frederick Sterner, *Associated*



Roofed with

Heinz French Flat Tiles

Hand-Faced—Graduated Colors

Heinz Special Shapes

Plymouth—Old English Shingle.
Venezian—Italian Tapered Mission.
Ronda—Spanish Tapered Mission.
Zoar—Long, Hand-Fluted Dutch.
Derby—Cut Face-French Flat.

The Heinz Roofing Tile Company

Manufacturers of Terra Cotta Roofing Tiles

Denver, Colorado

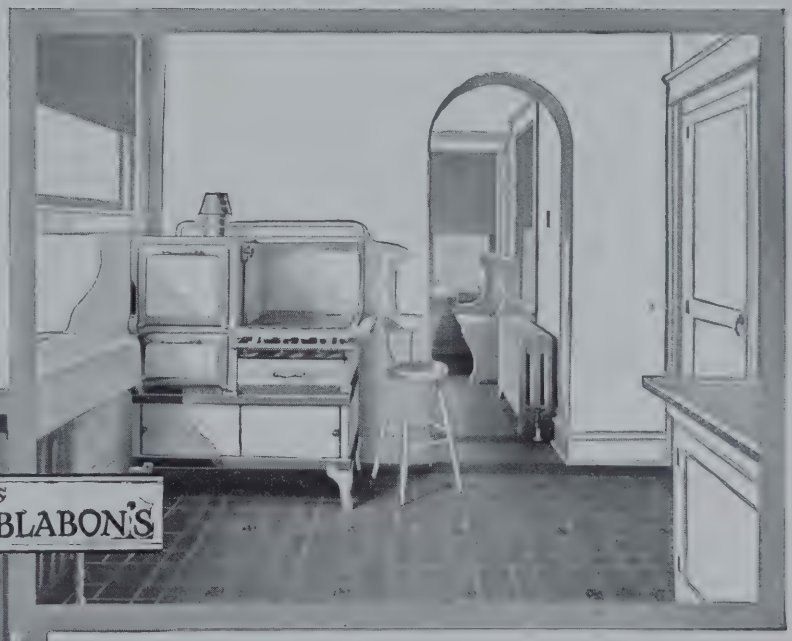
Eastern Office—101 Park Ave., New York
Phone: Caledonia 0809

If you plan homes with floors women like—there's no doubt they will have a readier sale. For women you know, with their preferences even for seeming

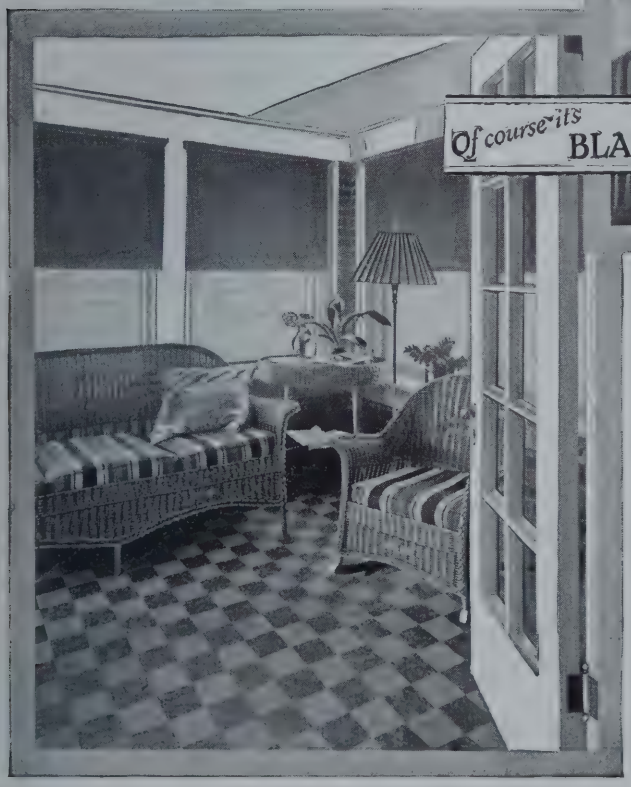
details, are often the deciding factor in buying a home.

The colorful patterns of Blabon's Inlaid Linoleum always take their eye. And when they realize that a Blabon floor lasts a lifetime and is easy to keep clean —that's the floor they want.

The 1928 patterns in Blabon floors are particularly alluring. You will find wonderful decorative possibilities in the exclusive Blabon reproductions of Jagged



In this kitchen, pantry and breakfast room is a Blabon floor of Inlaid Linoleum, pattern 104, with Plain Blue Linoleum border.



The Blabon floor of Inlaid Linoleum, pattern 1115, with Plain Black Linoleum border, gives a smart appearance to this sun porch.

Stone, irregular and rectangular Slatestone and Flagstone, Marble Tiles with Grecian decorative motifs, and other patterns appropriate for every room upstairs and down.

Our Advisory Bureau of Interior Decoration will gladly cooperate with you. No charge for the service.

You are cordially invited to consult our Service Bureau for Architects and Contractors regarding any flooring problems. A reprint from Sweet's Architectural Catalog, a Blabon Pocket Size Pattern Book, and a box of quality samples will be sent upon request.

The George W. Blabon Co., Nicetown, Philadelphia
Established 76 years

BLABON Guaranteed ART Linoleums

Look for this label on the face of all Blabon's Linoleum.

It's worth while insisting on

BLABON'S

-the Linoleum of enduring beauty

© The G. W. B. Co.

Map shows location of and territory served by the eleven modern mills which comprise the International System.

LONE STAR Cement is made by the International Wet-Blending Process. Under this process, fifty million gallons of water are evaporated daily in the mills of the International System. So thoroughly are the ingredients mixed that Lone Star Cement is identical in quality not only mill for mill and bag for bag, but literally pound for pound.

INTERNATIONAL CEMENT CORPORATION, New York

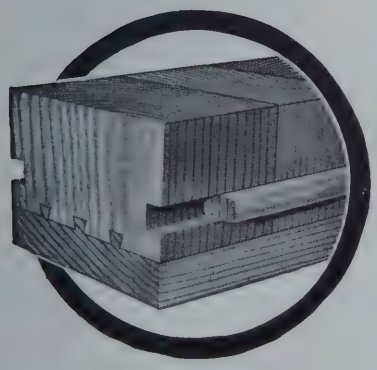
One of the world's largest cement producers — 11 mills, annual capacity 14,700,000 barrels.

These ten subsidiary companies operate the eleven mills which comprise the International System:

ALABAMA PORTLAND CEMENT COMPANY	Birmingham, Ala.	KNICKERBOCKER PORTLAND CEMENT CO., Inc.	Albany, N. Y.
ARGENTINE PORTLAND CEMENT COMPANY	Buenos Aires, Argentine	LOUISIANA PORTLAND CEMENT COMPANY	New Orleans, La.
THE CUBAN PORTLAND CEMENT CORPORATION	Havana, Cuba	TEXAS PORTLAND CEMENT COMPANY	Dallas and Houston, Tex.
INDIANA PORTLAND CEMENT COMPANY	Indianapolis, Ind.	URUGUAY PORTLAND CEMENT COMPANY	Montevideo, Uruguay
THE KANSAS PORTLAND CEMENT COMPANY	Kansas City, Mo.	VIRGINIA PORTLAND CEMENT CORPORATION	Norfolk, Va.

Geo. Steck & Company Piano Factory, Boston. Aberthaw Company, Engineers-Builders

The 4th *famous piano-maker* to install Bloxonend



Bloxonend is furnished in 8 ft. flooring lengths. The tough end grain forms the wearing surface.

George Steck & Co.—makers of quality pianos for 70 years —has joined the ranks of Bloxonend users along with STEINWAY, WEBER and BRAMBACH. Three entire floors of the huge new factory addition at Boston (shown above) are equipped with BLOXONEND.

It is significant that BLOXONEND is preferred by the leaders in practically every industry where floors are exposed to hard wear. Leaders in Meat Packing, Baking, Printing and Publishing, Textile, Railroad, Iron and Steel, and Automotive Industries use BLOXONEND because it reduces maintenance and operating costs. Also ideal for school gyms and shops.

BLOXONEND'S durability, resiliency, cleanliness and ability to stay smooth will appeal to your clients.

Sample and Specifications on request

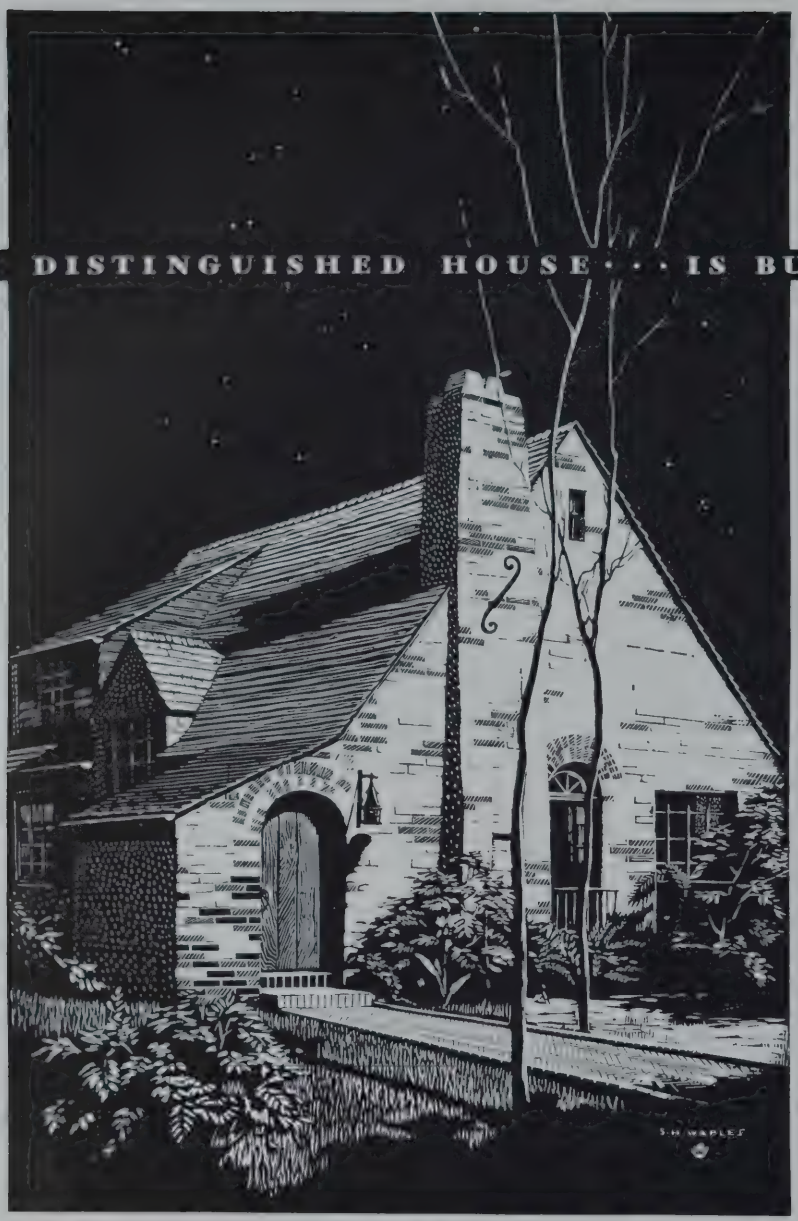
CARTER BLOXONEND FLOORING COMPANY

Kansas City, Missouri

Branch Offices in Principal Cities—See Sweet's

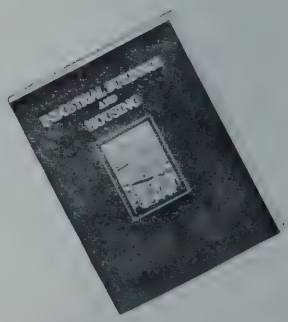
BLOXONEND FLOORING

Lays Smooth — Stays Smooth



Face Brick
made by a Member of the
AMERICAN FACE BRICK
ASSOCIATION

THE DISTINGUISHED HOUSE · · · IS BUILT OF FACE BRICK



Industrial Buildings and Housing

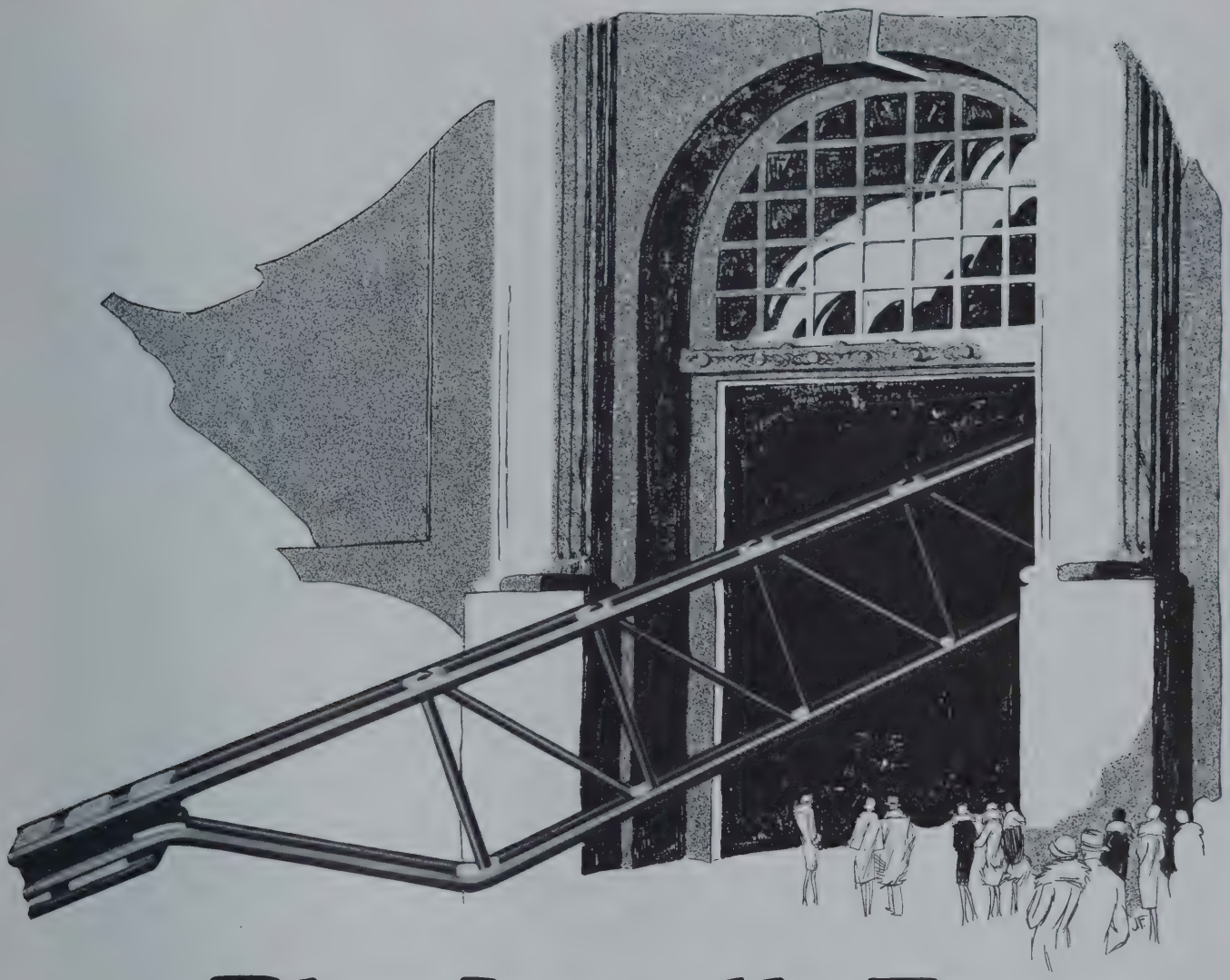
A reference book containing a generous fund of practical information concerning the planning and construction of the modern manufacturers' buildings and employees' communities. Profusely illustrated and well bound. Mailed postpaid to architects for two dollars.

AMERICAN FACE BRICK ASS'N
1751 *Peoples Life Building*
Chicago, Illinois

Like the canvases of the immortal Whistler, the beauty of many an architectural masterpiece is fast fading into a dull monochrome because the colors of the materials are not permanent. Far-seeing architects are averting such catastrophies by employing only materials which require no paint and whose beauty can never, never fade—

FACE BRICK

—requires no paint or whitewash



The Ingalls Truss

For Fireproof Floors *and* Roofs

The Ingalls Positive Anchored Truss is designed in strict accordance with conservative engineering practice. Each member is so proportioned that no overstress exists under the rated capacity. The anchorage to walls, concrete or steel beams is efficient and simple.

Ingalls Truss Floors are more soundproof, of light dead weight and economical. Further economy is obtained by the possible reduction in size of the supporting structural members.

Erection proceeds more rapidly and easily regardless of temperature without the need of skilled labor or special heavy equipment.

Ample space is available for all piping and additional savings are secured by the reduction in cost of piping installation.

The Ingalls Trusses were designed primarily to build better buildings by a simpler and more positive method and to do this at less cost.

Let us send you engineering data, details and complete specifications. You will find them helpful in solving your structural problems.

For
Schools
Churches
Office
Buildings
Theatres
Apartments
Homes
Etc.

A few high-grade representatives are desired for definite territory.

The Ingalls Steel Products Co.

MAIN OFFICE AND PLANTS, BIRMINGHAM, ALA.

Branch Offices:

New York
117 Liberty Street

New Orleans
1717 New Masonic Temple

Atlanta, Ga.
715 Healey Bldg.

Tampa, Fla.
1004 Tampa Theatre Bldg.

Miami, Fla.
1021 Seybold Bldg.

Information Samples Illustrations

Sheldon's Slates

come in
a Variety of Natural Textures
and (exclusive) Color Effects
insuring always
a Distinctive Combination
that endows
Every Kind and Type of Building
with
"*The Beauty of Appropriateness*"

Flooring Cooperation Flagging

F. C. SHELDON SLATE COMPANY

General Offices, Granville, N. Y.

St. Paul, Minn.
364 Rice St.

Chicago
228 N. La Salle St.

New York City
101 Park Ave., Room 514

Cincinnati, O.
35 Poinciana Apt.

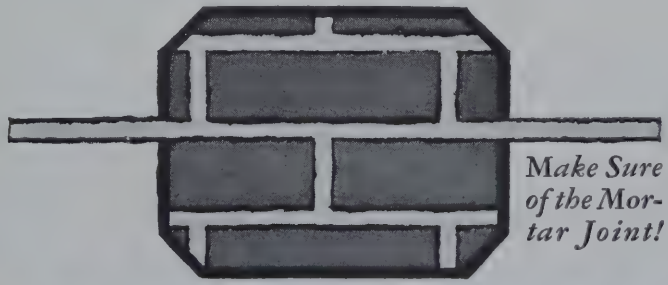
Detroit, Mich.
115 Francis Palms Bldg.

Columbia, S. C.
17 Carolina Bank Bldg.

for winter masonry!

BRIXMENT mortar can be used successfully in the severest weather by heating the sand and water which causes the mixture to set before freezing can occur. Further protection is given by the oily content of BRIXMENT itself which reduces the freezing point of the mortar. Send for architect's handbook. Louisville Cement Co., *Incorporated;* General Offices: Louisville, Kentucky.

MILLS: BRIXMENT, NEW YORK, *and* SPEED, INDIANA



Make Sure of the Mortar Joint!

Use BRIXMENT *for Mortar*

An Odd Roof Effect

attained by laying IMPERIAL *Spanish Tiles in slightly curving lines*

This is but one of many unusual roof treatments which can be achieved with IMPERIAL Roofing Tiles. Because of the variety of ways in which they may be laid, and the countless color effects obtainable with them, they give the architect a greater opportunity for self-expression than does any other roofing material.

Moreover, by employing them the architect can rest assured that he has given his client the most enduring roof it is possible to specify. Long after roofs of less permanent materials have required replacement, a roof of IMPERIAL Roofing Tiles will be warding off weather quite as efficiently as it did when it was new.

LUDOWICI - CELADON COMPANY
Chicago, 104 S. Michigan Ave. New York, 565 Fifth Ave.

IMPERIAL
Roofing Tiles

WRITE for free folder containing color reproductions of IMPERIAL *Roofing Tiles and residences roofed with them*

Regardless of whether the home is to be built of stone, wood, stucco or brick, Masonite Structural Insulation is a sound investment.

Residence of A. C. McCullough, Nashville, Tenn. Architect and Builder, A. C. McCullough. Masonite used for attic insulation and as interior finish throughout second floor.

This *thermostatic* wood is superior for *insulation, strength* and *acoustics*

Masonite, the thermostatic wood, not only assures permanent insulation against heat and cold, but it makes an excellent sound deadener and an ideal plaster base. It also provides good, strong sheathing.

Exhaustive tests by Robert W. Hunt, Riverbank Laboratories and Armour Institute prove the superiority of Masonite—for heat insulation, for strength and for acoustics. If you will mail attached coupon, we will gladly send reports of these tests.

MASON FIBRE COMPANY
111 W. Washington Street, Chicago, Ill.
Mills: Laurel, Mississippi

Masonite
MANUFACTURED LUMBER FOR
STRUCTURAL INSULATION

© M. F. Co. 1927

Send Coupon!

MASON FIBRE COMPANY
Dept. 612A, 111 W. Washington St.
Chicago, Ill

Please send me reports of tests showing superiority of Masonite.

Name .....

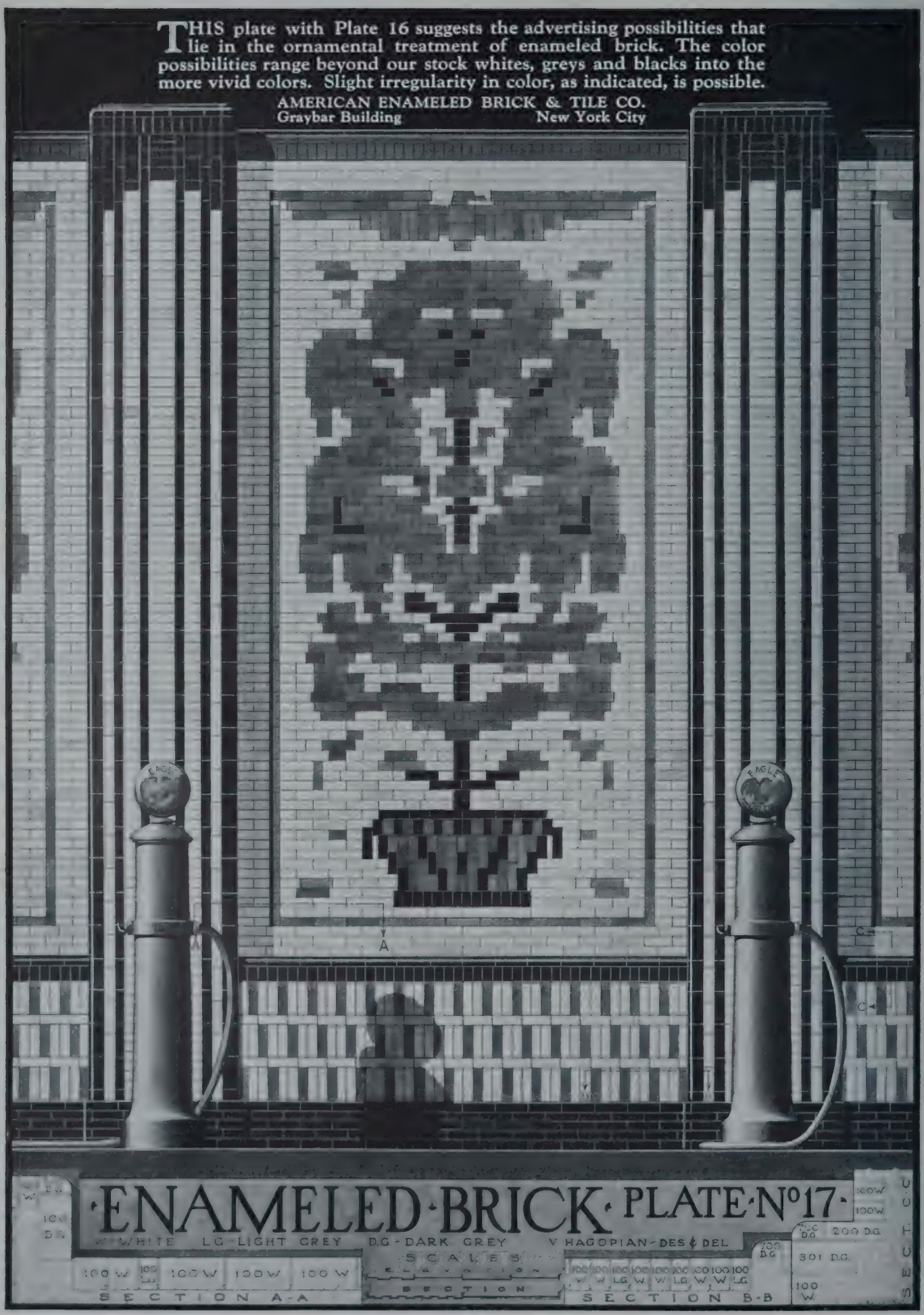
Street .....

City .....

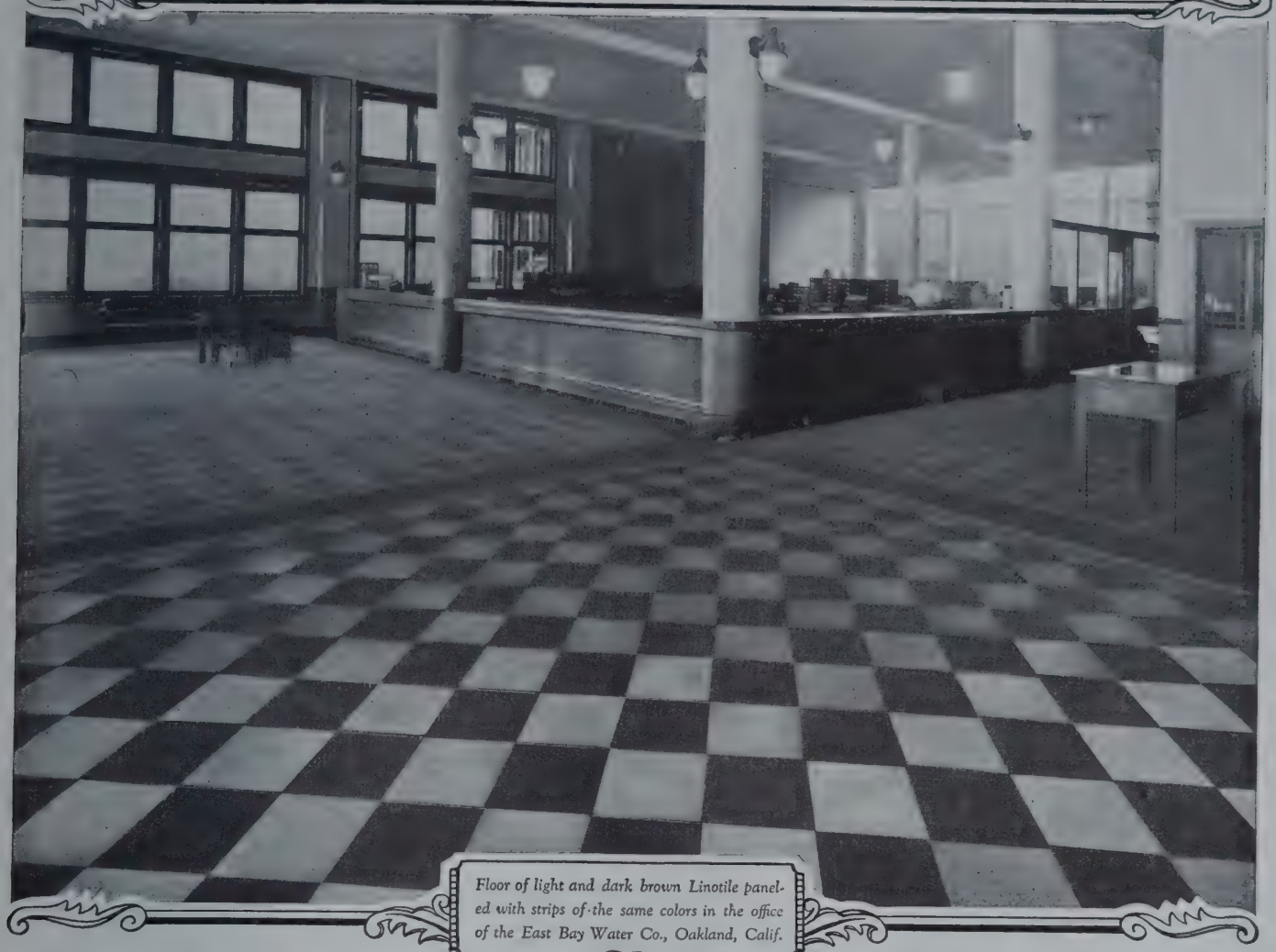
State .....

THIS plate with Plate 16 suggests the advertising possibilities that lie in the ornamental treatment of enameled brick. The color possibilities range beyond our stock whites, greys and blacks into the more vivid colors. Slight irregularity in color, as indicated, is possible.

AMERICAN ENAMELED BRICK & TILE CO.
Graybar Building New York City



Copies of these plates in folio will be mailed upon request



Floor of light and dark brown Linotile paneled with strips of the same colors in the office of the East Bay Water Co., Oakland, Calif.

Effective Use of Linotile in Panel Design

THE panel effect, which serves to break up the monotony of large floor areas, is very easily handled with Linotile. The sizes of both strips and tiles lend themselves readily to this treatment, and the great variety of colors make it possible to work out very pleasing decorative designs.

The merits of Linotile, however, are by no means restricted to its decorative possibilities. Comfort and resilience underfoot, quietness, and nonslipperiness are properties that commend it especially for business offices and similar public spaces. A Linotile floor is almost as noiseless as carpet and has that "live," springy feel to the tread that prevents fatigue and strain.

Linotile has a tough, resistant texture that "stands up" even at such points of concentrated traffic as doorways and counters with little evidence of wear even after years of service. It is dustless, easily cleaned and needs no refinishing.

A sample of Linotile and a copy of the book, "Linotile Floors for Public and Semi-Public Buildings" containing full information and specifications, will be mailed on request. Address Armstrong Cork & Insulation Company, 132 Twenty-fourth Street, Pittsburgh, Pa.

Armstrong's Linotile Floors

FRINK

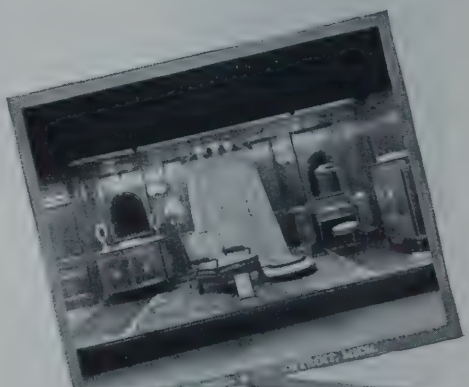
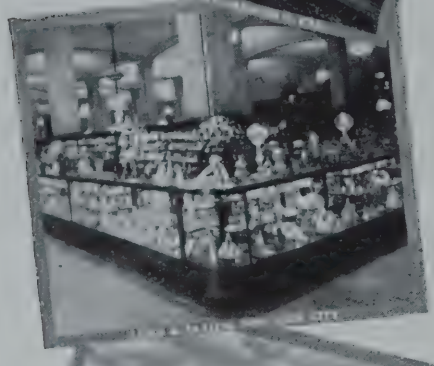
Department Store Illumination

STRETCHING across the country is a chain of great department stores, in no way related—highly competitive, but each depending on Frink illumination. This is a difficult field to serve with light. To the modern store, light means sales. Light in novel effects is used for advertising. Hardly an important store is built today that does not use Frink products.

Our knowledge of the field is at your service.

THE FRINK CO., Inc.
241 Tenth Avenue
NEW YORK

Branches in Principal Cities

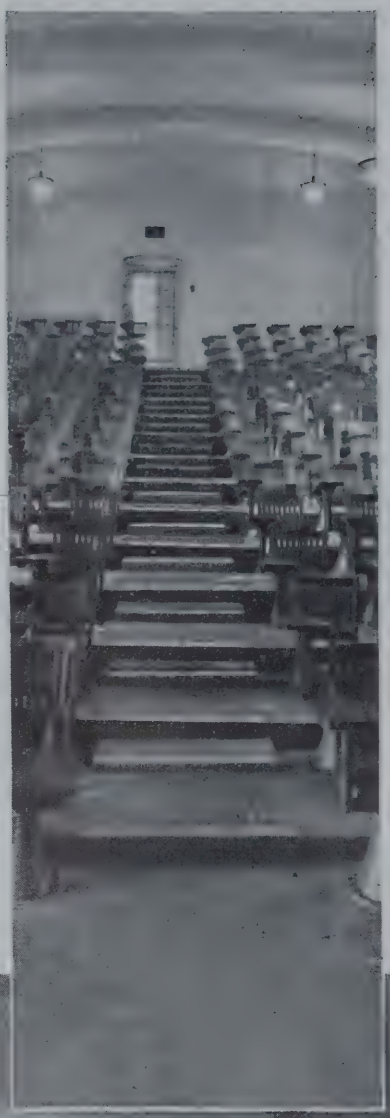
In Wellesley's Newest Lecture Hall
—*Non-Slip Steps of Alundum Tile*

R-r-r-r-r-ing goes the closing bell. The girls swarm from their seats. They pour down the aisles. And the hustling feet are protected against slipping for each step in the lecture hall of the new Botany Building has a nosing of Alundum Stair Tile.

Not only is this tile permanently non-slip but flat, without grooves or corrugations to catch heels. And because of the exceptional durability of Alundum Tile worn hollows will not appear under the heaviest and most concentrated traffic.

NORTON COMPANY, WORCESTER, MASS.
New York Chicago Detroit Philadelphia
Pittsburgh Hamilton, Ont.

T-200



NORTON FLOORS
Alundum Tiles, Treads & Aggregates

Botany Building, Wellesley College, Wellesley, Mass.

Day & Klauder, Architects, Philadelphia, Pa.

In St. Louis, the majestic Southwestern Bell Telephone Building (Mauran, Russell & Crowell, Architects), is also equipped with Mississippi Polished Wire Glass. Every window above the ground floor has Mississippi protection. Added recognition for the recognized standard in Wire Glass.

"MISSISSIPPI" WIRE GLASS

MISSISSIPPI WIRE GLASS COMPANY, *220 Fifth Ave.*, NEW YORK
CHICAGO ST. LOUIS

The Shadow Chasers

Ainsworth Archer Model

Central Building

Berkeley Building and National Association Building Starrett & Van Vleck Architects

It's Never Too Late for Correct Lighting

EACH of these three New York buildings was opened at some time within the past ten years. In each of them, tenants squinted, strained, looked closer, wiped tears from smarting eyes.

Light? There was plenty—that is, *at the source*, glaring, casting sharp shadows on desks and papers. Or, smothered in unscientifically designed globes, it only half-reached the desks, left corners dark and gloomy.

Recently, tenants noted a remarkable improvement—all lighting glassware had been replaced with MONAX Globes (the Ainsworth Archer Model, illustrated above). Offices and corridors were abundantly lighted, sharp shadows softened or entirely disappeared. Even the farthest corners were brightened by the generous flood of illumination. Glare had vanished, for MONAX diffuses light perfectly.

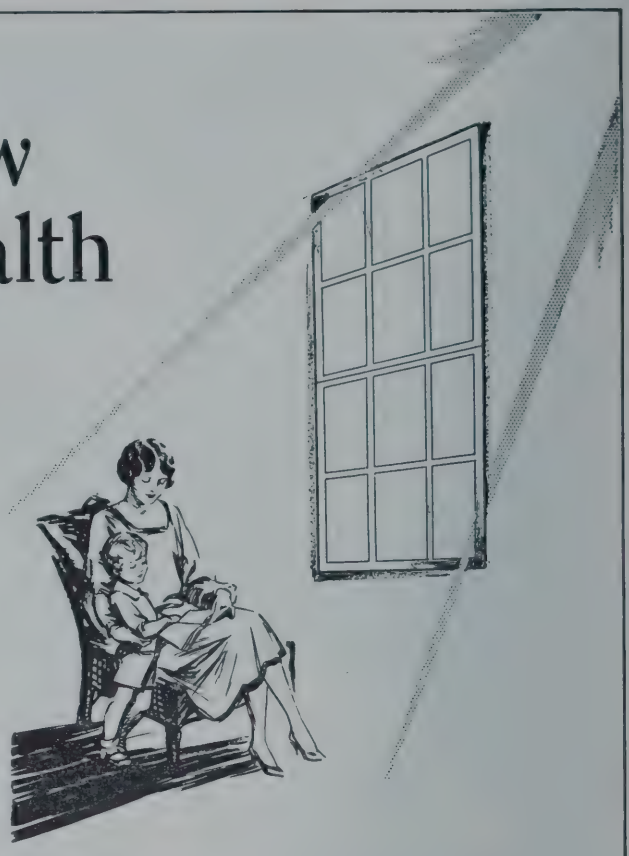
The building management is pleased, because, besides correcting a serious lighting defect, MONAX Globes are economical of wattage. They absorb scarcely any light, do not collect dust, and are easily cleaned. Their thanks to Macbeth-Evans Glass Company, who supplied the globes, and to George Ainsworth of New York who planned the installation.

The planning service of Macbeth Illuminating Engineers is available to any architect or building manager. Address Macbeth-Evans Glass Company, Dept. J., Charleroi, Pennsylvania.

MONAX GLOBES
for Better Lighting

Every Window a Source of Health

when the home is glazed with this Ultra-Violet Ray Glass



QUARTZ-LITE is a clear, flat glass of high quality and brilliant lustre, appropriate for the finest residences. It will enhance the attractiveness of any building in which it is used.

And yet QUARTZ-LITE costs less than plate glass and but little more than ordinary window glass. It is so low in price that it can be used for general glazing purposes—*only 50c a square foot.*

A building glazed with QUARTZ-LITE is a comfortable place in which to live or work. With this wonderful new glass in the windows, much of the ill health that follows our dreary indoor winter season is avoided, for QUARTZ-LITE brings into the rooms nature's own tonic—the ultra-violet rays of sunlight. These health-giving rays flood the interior through QUARTZ-LITE GLASS, and stimulate everyone physically and mentally. QUARTZ-LITE brings outdoor health indoors every day of the year. Windows glazed with QUARTZ-LITE GLASS transmit a greater volume of ultra-violet rays —the health rays of sunlight—more daylight and more of the warmth of sunlight than is possible with other window or plate glass.

QUARTZ-LITE is so called because it contains the highest percentage of pure quartz found in any clear glass used for windows. QUARTZ-LITE GLASS transmits a recognized effective range of the ultra-violet rays of the sun necessary for heliotherapy.

The results of scientific investigations by eminent scientists attest these facts.

QUARTZ-LITE can be used to great advantage in homes, office buildings and industrial plants. Apartment buildings and dwellings glazed with QUARTZ-LITE GLASS can be rented or sold more readily. Leading glass dealers everywhere handle QUARTZ-LITE. If your dealer does not have it, write direct to us. Mail the coupon below for specification sheet and description of this remarkable ultra-violet ray glass.

Quartz-Lite
TRADE MARK

The Ultra-Violet Ray Glass

AMERICAN WINDOW GLASS COMPANY

World's Largest Producer and Pioneer Manufacturers of Machine-Made Window Glass of the finest quality—"The BEST Glass"

PITTSBURGH, PA.

District Sales Offices in Principal Cities

AMERICAN WINDOW GLASS CO. AF-12
FARMERS BANK BLDG.
PITTSBURGH, PA.

GENTLEMEN:

Please send me further information concerning QUARTZ-LITE, the Ultra-Violet Ray Glass.

Name_____

Street_____

City_____ State_____

For Better Glazing

specify

Libbey-Owens

FLAT-DRAWN CLEAR SHEET GLASS

There is no finer glass for windows than LIBBEY-OWENS "A" quality flat-drawn sheet glass.

Made by an exclusive process, it is uniform in thickness, beautifully clear, with a brilliant sparkling lustre, and absolutely without bow.

Each light of LIBBEY-OWENS "A" quality glass is especially selected. Twice inspected and twice graded to insure its measuring up to our exacting standards, it represents the very best glass for windows we are able to manufacture.

To protect its brilliant lustre, LIBBEY-OWENS "A" quality glass is packed with water-marked paper between the lights, and to enable you to identify this superior glass, each individual light bears the manufacturer's label.

Specify LIBBEY-OWENS "A" quality flat-drawn clear sheet glass for windows —and provide for your clients the glazing perfection this superior glass makes possible.

A national advertising campaign in the Saturday Evening Post is teaching the public to demand quality glass for windows —and to identify superior glass by its name—LIBBEY-OWENS.

SEE OUR CATALOGUE IN SWEETS

THE LIBBEY-OWENS SHEET GLASS CO.
TOLEDO, OHIO

LIBBEY-OWENS FLAT-DRAWN CLEAR SHEET GLASS FOR WINDOWS

Distributed Through Representative Glass Jobbers and Used by Sash and Door Manufacturers Everywhere

Ash Removal

Labor Saving. Safe. Speedy

THE MODEL D ELECTRIC HOIST recently installed at R. H. Macy & Co.'s Garage is the fifth G&G Electric Hoist that Robt. D. Kohn has specified for Macy buildings. Garages are only one of many types of buildings where G&G equipment can be advantageously used. See Sweet's for full description.

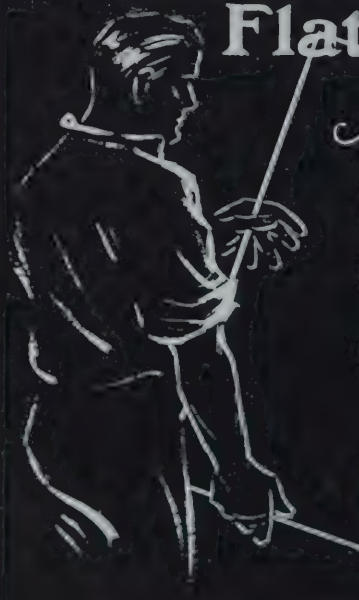
GILLIS & GEOGHEGAN
544 West Broadway, New York

VITA GLASS

the most widely used, best known, most conclusively health-tested ultra-violet transmission glass in the world.

VITAGLASS CORPORATION
50 EAST 42D STREET
NEW YORK CITY

Adamston Flat Glass



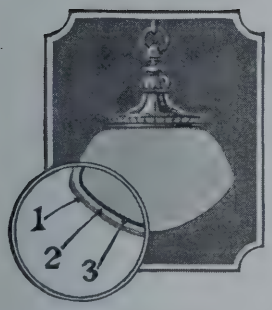
A Quality Product
Perfectly Flat
Strong &
Uniform in Thickness
A brand you
FLAT DRAWN SHEET GLASS
ADAMSTON FLAT GLASS CO.
CLARKSBURG, W.VA.
can depend upon

Write for name of Adamston Jobber in your vicinity.

ADAMSTON FLAT GLASS COMPANY
CLARKSBURG, W. VA.

A typical CELESTIALITE installation in one of the Scientific American offices

The Modern Trend in Architecture



CELESTIALITE'S *Three Layers:*

[1] Of crystal clear transparency—for body and strength.

[2] A layer of white glass—to diffuse the rays and soften the light.

[3] A layer of blue glass—to whiten, clarify and perfect the light.

How times are changing! Twenty years ago the business office was a gloomy place. Men were destined to toil under drab conditions. Today the business man demands that his office be one harmonious unit of dignity and beauty. Entrances, reception rooms, all are designed to appeal to man's aesthetic sense.

But, frequently the necessity of correct lighting is overlooked. Without proper illumination the most luxurious interior appears lifeless and dull. And proper illumination does not mean strong, glary light.

Many of the best architects are specifying CELESTIALITE

Celestialite saves your eyesight

CELESTIALITE, the *three layer lighting globe,* throws a soft, white light that accentuates all of the minute niceties that the architect so carefully specifies.

The three individual layers of glass (see illustration on left) diffuse and soften the light rays so that you can work for hours and hours without straining the eyes.

Scientific American Offices are Celestialited

The Scientific American organization made a study of the lighting problem. Their tests convincingly proved that CELESTIALITE illuminates interiors better than any lighting glass obtainable today.

Unusual Trial Offer

Be convinced! We are so sure Celestialite can sell itself that we offer a sample displayed in your own office at our expense. Just mail request on firm's letterhead.

Mail coupon for free CELESTIALITE catalogue, A. I. A. file and fragment showing the unique three layer construction. Gleason-Tiebout Glass Co., Celestialite Division, 200 Fifth Avenue, New York.

CELESTIALITE

(PATENTED)

MAN'S BEST SUBSTITUTE FOR DAYLIGHT

SEND THIS COUPON NOW

Gleason-Tiebout Glass Co., *(Celestialite Division)*
200 Fifth Ave., New York City (AF-12)

Kindly send me free catalogue, A. I. A. file, and fragment of CELESTIALITE showing its three layer construction.

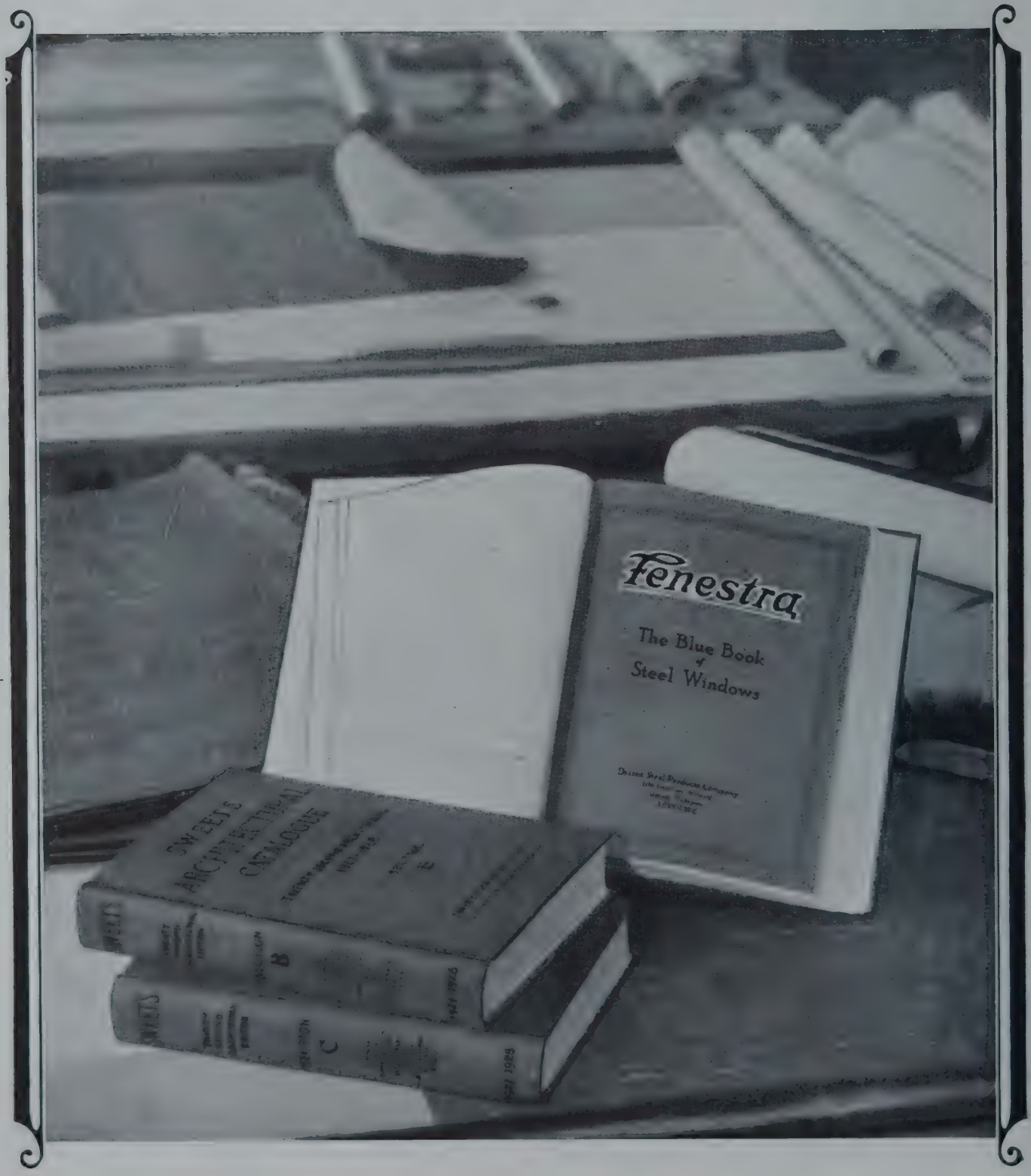
*Name*_____

*Position*_____

*Address*_____

*City*_____

The Complete Fenestra



Blue Book

is now in Sweet's Architectural Catalogue

COMPLETE specifications and details of Fenestra Residential, Architectural and Industrial Steel Windows, Operators, Doors and Partitions are now covered by an 82-Page Fenestra Blue Book in the 1927-28 Edition of Sweet's Architectural Catalogue. ' ' ' Separately bound copies of the Fenestra Blue Book for drafting room use also may be obtained upon request. ' ' ' Fenestra Designing, Detailing and Erection Organizations, located in principal cities of the country, are prepared to render special assistance whenever and wherever desired.

DETROIT STEEL PRODUCTS COMPANY, 2262 EAST GRAND BOULEVARD, DETROIT, MICHIGAN
FACTORIES: DETROIT, MICH., AND OAKLAND, CALIF. CONVENIENT WAREHOUSE STOCKS

Fenestra
STEEL WINDOWS

Residence of Percy A. Tonk, Evanston, Illinois. Sloan & Johnson, Architects.

GUARANTEED WEATHER-TIGHT—WITHOUT WEATHER-STRIPS

THE Crittall Steel Casement Windows in this home afford absolute protection against inclement weather. They are *guaranteed* wind and weather tight without *weather strips* in either inward or outward opening types—they permit easy ventilation—they are free from sticking or rattling.

For your jobs—even the most moderately priced—Crittall Standardized Steel Casements offer a lasting beauty, enduring strength, and thorough practicability, heretofore found only in the highest priced specially built casements.

Built of the same heavy section as Crittall Custom-built Casements, they are rigidly restricted to selected sizes and types, which permits a price within the limits of most of your commissions.

CRITTALL CASEMENT WINDOW COMPANY
10946 Hearn Avenue Detroit, Michigan

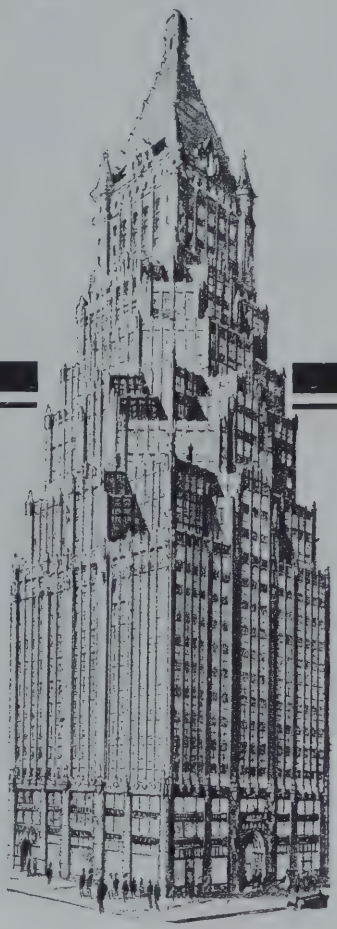
CRITTALL CASEMENTS

Available in a wide variety of Standardized sizes and types. Also Custom Built to the architect's sizes, designs and specifications

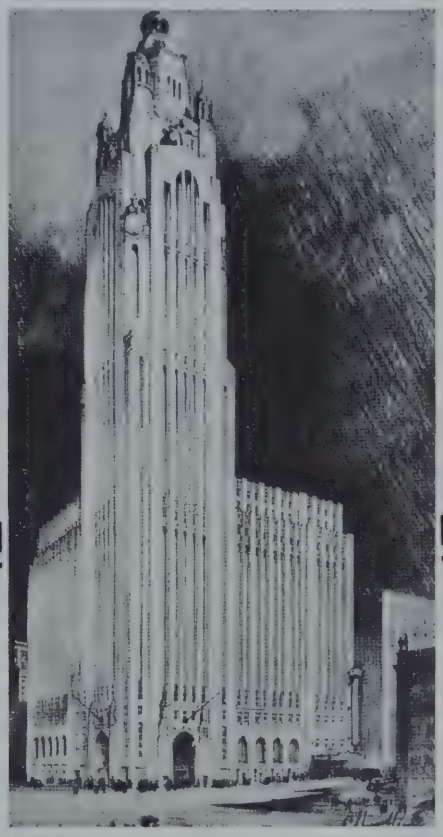
DAVIS

—SOLID— *Architectural* BRONZE STORE FRONT CONSTRUCTION

818 West Adams St. Building. Chicago. Architects, Loebl, Schlossman & Demuth, Chicago



The Court-Livingston Building, Borough Hall, Brooklyn, Architect, A. J. Simberg, Brooklyn



The American Insurance Citadel, Columbus, Ohio. Architect, C. Howard Crane, Detroit

The Davis Fulcrum Principle

Architects will be interested in the unique method of holding the plate firmly, uniformly and safely in all Davis sash and bars. There is nothing else like it. The heavy solid bronze assures unusual strength. All glass is set from the outside—no putty or plastic cement necessary.

And now—

a New Era in Store Fronts

In harmony with the towering grace of the modern business building has come a new need for permanent beauty in the treatment of its store windows.

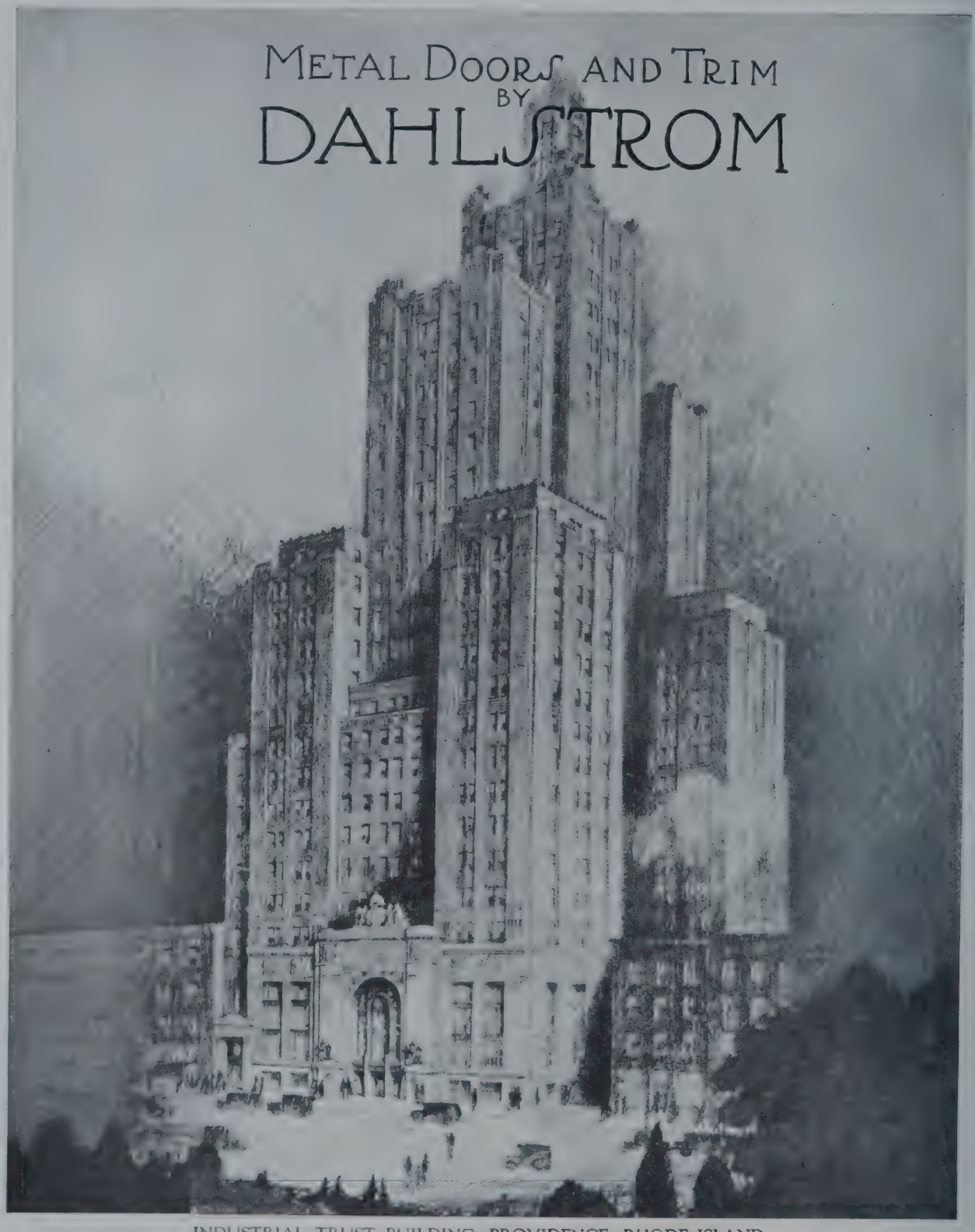
No material can match the enduring richness and charm of solid bronze for framing the glistening plate, and architects everywhere are finding in Davis the fullest measure of these new advantages.

Davis Construction is built on an exclusive patented design—the fulcrum principle—bringing certain safety to the glass, lasting strength, easy installation. *Full sized details and samples gladly sent on request.*

DAVIS EXTRUDED SASH CO. — LINCOLN, NEBRASKA

Complete Stocks Carried at Convenient Centers

METAL DOORS AND TRIM
BY
DAHLSTROM



INDUSTRIAL TRUST BUILDING, PROVIDENCE, RHODE ISLAND
Architects
Jackson, Robertson & Adams
General Contractors
Williams & Merchant

DAHLSTROM METALLIC DOOR COMPANY
JAMESTOWN, N. Y.—*Established 1904*
Branch Offices NEW YORK, 475 Fifth Avenue CHICAGO, 19 South LaSalle Street DETROIT, 1331 Dime Bank Building

ARTISTIC DURABLE SANITARY FIREPROOF

WASHABLE

···SO THEY OUTLAST IN WEAR AND BEAUTY

College Hospital uses Tontine shades exclusively

McKinley University Hospital
University of Illinois

Du Pont Tontine was chosen exclusively to shade the windows of the recently completed McKinley University Hospital of the University of Illinois. Charles A. Platt, 101 Park Avenue, New York and James M. White, of Champaign, Ill., Architects.

NO one knows better than the architect that everyday hospital conditions call for unusual qualities in a window shade. The service is unceasingly severe—abuse frequent.

Du Pont Tontine is one shade built to withstand these conditions. It is made, by a unique new process, of materials different from ordinary painted or starch-filled shades.

NO FILLER TO FALL OUT, but thoroughly impregnated with pyroxylin. Tontine cannot crack or "pinhole."

WASHABLE. All dust, grime and fingermarks are easily removed with soap, hot or cold water and a brush.

WATERPROOF. Dampness cannot make it limp. Even heavy rains can't harm it.

The durability of Tontine obviates the need of frequent shade replacement—makes Tontine cost less per year for hospitals, schools and business buildings, as well as hotels, apartments and residences. Write for samples to prove Tontine's advantages to you.

E. I. DU PONT DE NEMOURS & CO., Inc.
Newburgh, N. Y.

Canadian Distributor:
CANADIAN FABRIKOID Limited
New Toronto, Ontario, Canada

DU PONT
TONTINE
THE WASHABLE
WINDOW SHADE

These are the highest grade steel windows for monumental buildings

In Main Street, as in the Metropolis, the bank building is frequently the chief architectural work in its community.

Is it not significant that Lupton Heavy Casement Windows are so generally specified for banks? The dignity of their design and the excellence of their construction commend these high grade steel windows to the architects of banks and of other fine buildings throughout the country.

Lupton Heavy Casements are made in several standard types and can be finished to suit any size or shape of opening. Let us figure on your requirements.

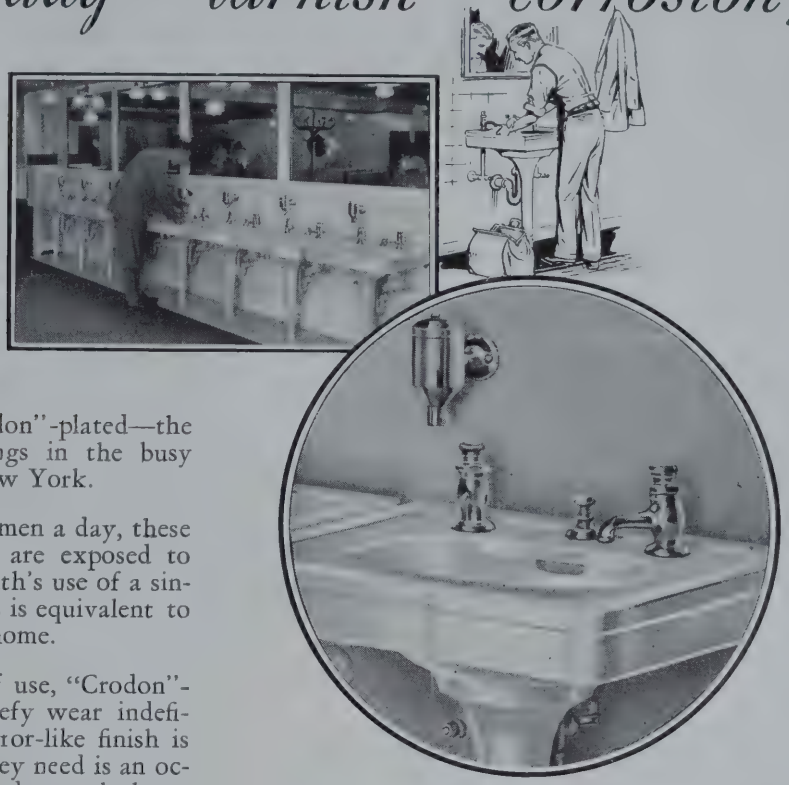
DAVID LUPTON'S SONS COMPANY
2207-d East Allegheny Avenue • PHILADELPHIA

THE ST. CHARLES NATIONAL BANK, ST. CHARLES, ILL. ARCHITECTS—WOLF, SEXTON, HARPER & TRUEAX.

LUPTON WINDOWS *of Steel*

CONQUERED –

the wear of thousands of handlings a day – tarnish – corrosion!



FOR now they are "Crodon"-plated—the metal washstand fittings in the busy Grand Central Terminal, New York.

Used by an average of 3700 men a day, these washstands, twelve in all, are exposed to constant handling. One month's use of a single set of their metal fittings is equivalent to a year's use in the average home.

Regardless of the amount of use, "Crodon"-plated plumbing fixtures defy wear indefinitely. Their sparkling, mirror-like finish is permanent. The only care they need is an occasional wiping off with a damp cloth to remove dust or grease. No polishing paste is necessary.

"Crodon" does not tarnish, corrode or fade. Even when exposed to live salt-water steam it does not peel off.

Because of its permanent brilliance, wearing qualities and the economy it ensures, "Crodon" is used in the Salmon Tower, New York City; Battle Creek Sanitorium; Fort Shelby Hotel addition, Detroit; Union and New Haven Trust Company Office Building, New Haven; Industrial Trust Company Office Building, Providence; and many other buildings of prominence throughout the country. It has definitely established its value.

Manufacturers carry "Crodon"-plated fittings in stock or can have fittings "Crodon"-plated for you in one of our own plants. Upon request our Service Department will give any desired information or refer you to our licensees, who will provide estimates of the cost of "Crodon" for any building project.

CHROMIUM CORPORATION *of* AMERICA
120 Broadway ~ New York, N. Y.

CRODON

TRADE MARK REG. U. S. PAT. OFF.

THE CHROME PLATE

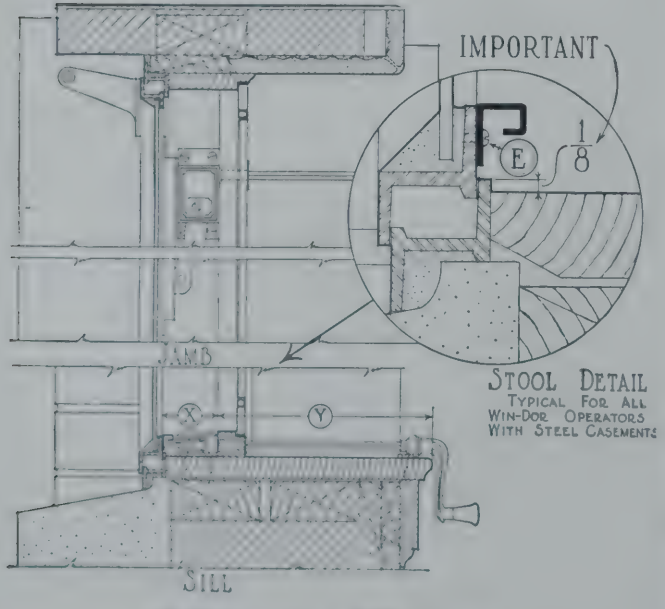
PERMANENTLY BEAUTIFUL · DOES NOT TARNISH · WEARS INDEFINITELY

Win-Dor *Series 25* Casement Operator

Particularly suited to steel casements

This handsome new addition to the Win-Dor line offers advantages never before available. So compact that it does not project above the sight-line, and designed in lines of real architectural beauty. Only four turns of the crank are needed to swing the casement full open. The action is exceptionally powerful, easy and free from play. Bearings and gears are completely enclosed and cannot "freeze" because one member of any two working parts is always made of non-corroding bronze. The most compact, the most beautiful and the longest-wearing geared operator now on the market.

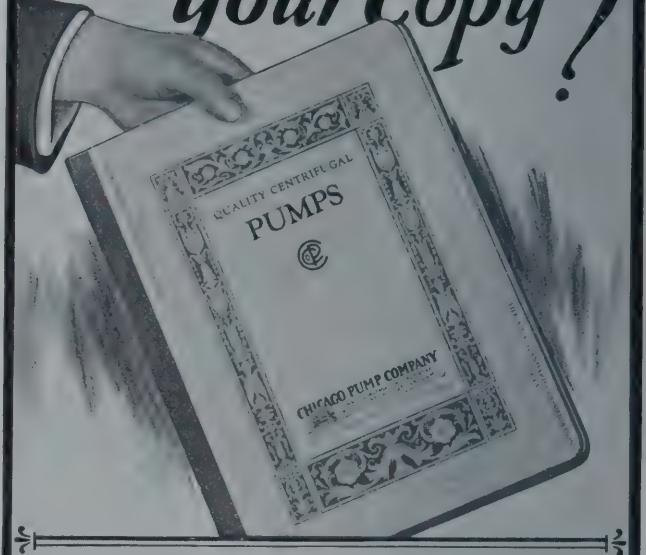
Send for Bulletin 102, just out, which shows detail drawings and gives full specifications. For full line see Sweets pp. 1852-1855.



STOOL DETAIL
TYPICAL FOR ALL WIN-DOR OPERATORS WITH STEEL CASEMENTS

Win-Dor
CASEMENT HARDWARE
The Casement Hardware Co.
402P North Wood Street
Chicago
CASEMENT HARDWARE HEADQUARTERS

Did You Get Your Copy?

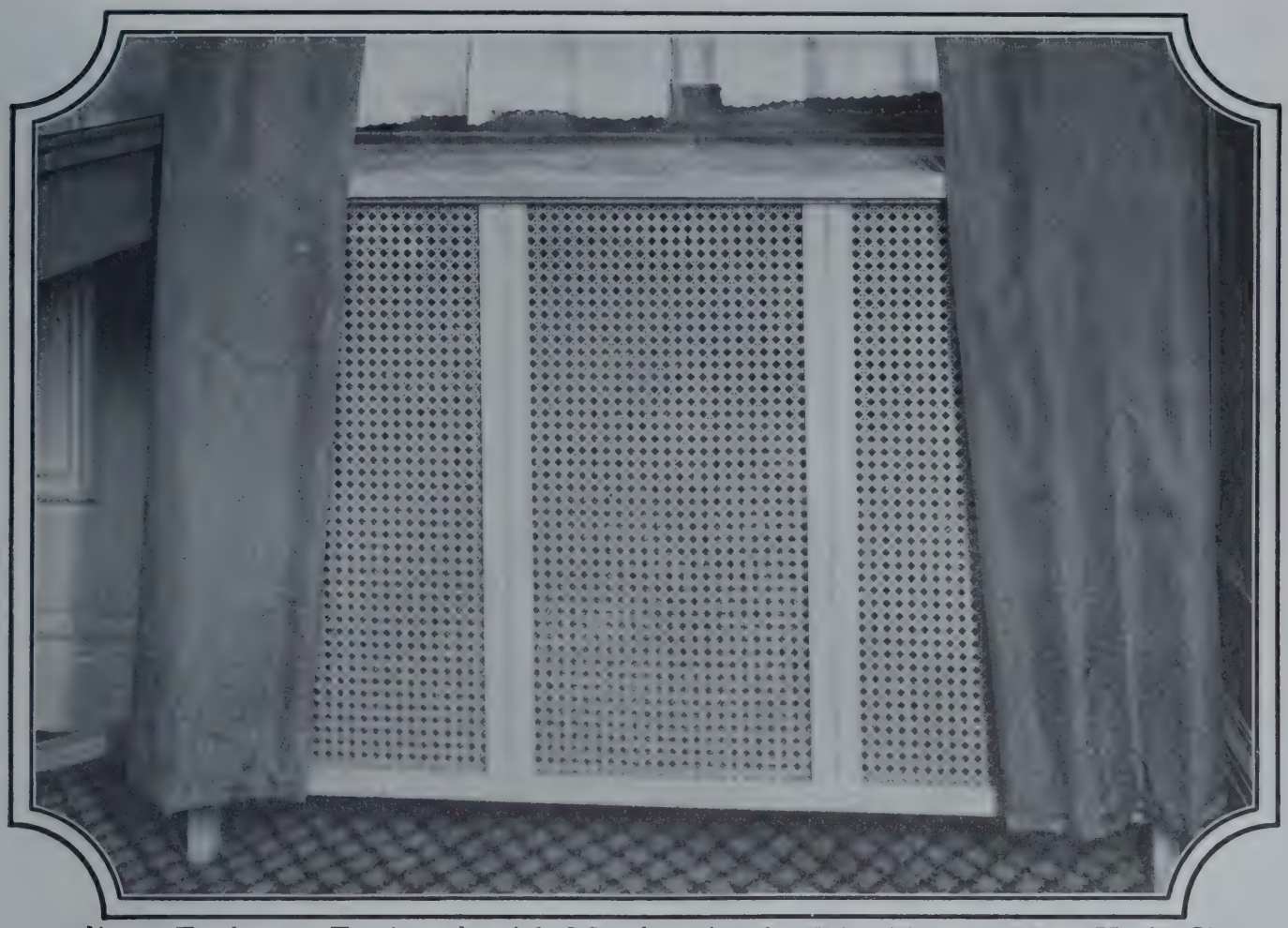


It tells all about Pumps.
A post card will bring it.
Send for it today.

CHICAGO PUMP COMPANY
SEWAGE-CONDENSATION-CIRCULATING
BILGE-FIRE-HOUSE-VACUUM
2316 WOLFRAM ST. , , CHICAGO, ILL.

PRINCETON
UNIVERSITY
CRAM, GOODHUE & FERGUSON · ARCHITECTS.

HOPE'S
METAL WINDOWS
HENRY HOPE & SONS
103 PARK AVENUE · NEW YORK



Radiator Enclosure Equipped with Metalace in the Ritz Tower, New York City

EMERY ROTH, Architect TODD ROBERTSON & TODD ENGINEERING CORPORATION, Builders

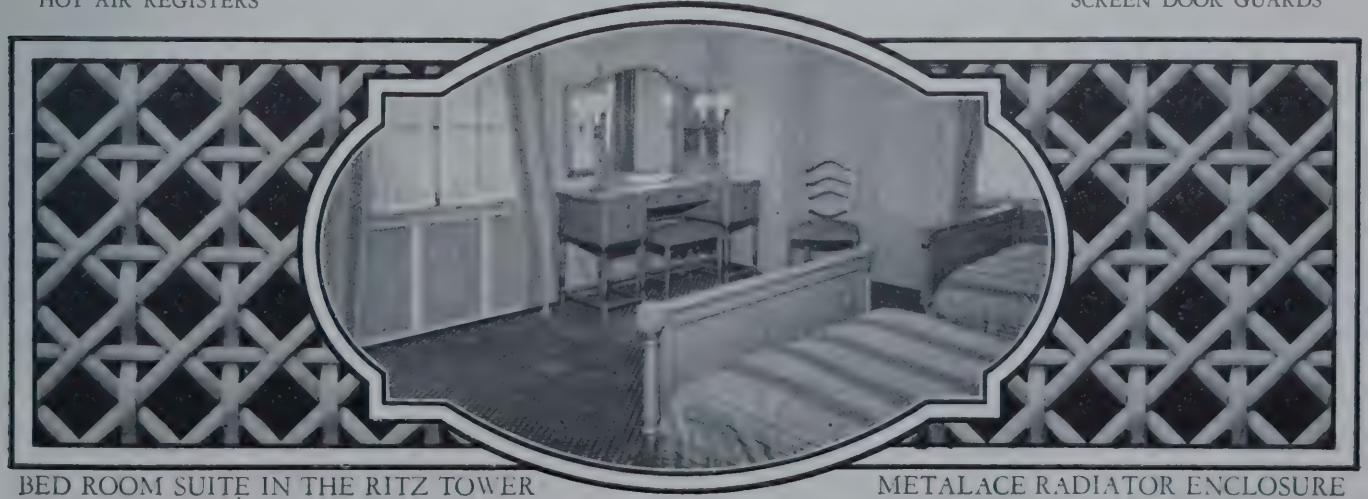
Throughout this Country and Abroad Metalace is the Standard for all Forms of Radiator Enclosures and Heating Installations

Write for Illustrated Catalog with New Metalace Patterns in steel or bronze

THE METALACE CORPORATION
SOUTH BOSTON, MASS.
NEW YORK OFFICE — 101 PARK AVENUE

Specify Metalace for
RADIATOR ENCLOSURES
VENTILATORS
HOT AIR REGISTERS

Specify Metalace for
INTERIOR PARTITIONS
CASHIERS' CAGES
SCREEN DOOR GUARDS



BED ROOM SUITE IN THE RITZ TOWER METALACE RADIATOR ENCLOSURE

The Satis is Best

RALPH HITZ

OFFICE OF THE MANAGER
HOTEL GIBSON
CINCINNATI, O.

August 5th, 1927.

Mr. L. H. Kaiser, Pres.,
The John Van Range Co.,
Cincinnati, Ohio.

My dear Mr. Kaiser:

The Tiffany in the Kitchen Equipment line.

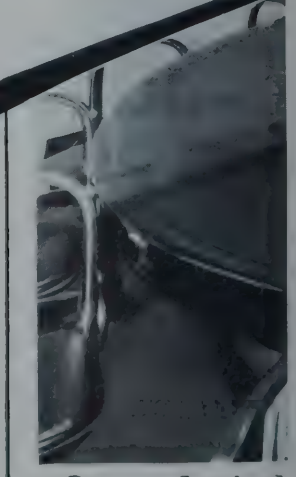
The above tells the story of John Van Range. For the past several years I have had the pleasure of doing business with you in different parts of the country, and particularly since my coming here-completely remodelling the Coffee Shop Kitchen, and installing the new Sandwich Grill. As each job has been completed, I have marvelled at the finished, efficient appearance and the quality of the material and workmanship.

My reason for writing you at this time is to particularly commend the close co-operation and efficient manner in which the installation was handled by your Chief Engineer, Mr. Forbriger.

Assuring you it will always be a pleasure to recommend "The Tiffany of the Kitchen Equipment World," to my friends and other hotel managers, I am

Very truly yours,
Ralph Hitz
Manager.

RH
ms



The HOTEL GIBSON
Cincinnati, Ohio
Mr. RALPH HITZ, Manager

Cincinnati's famous hotel has long been a user of Van Equipment.

Sandwich

faction of Every Van User Expressed by Mr. Hitz ~ ~ ~

IF you are considering buying kitchen equipment . . . . Mr. Hitz' letter will interest you. He says about Van Equipment what *you* will want to say about the equipment you buy! You are sure to enjoy this same enthusiasm if you bring your equipment problem, large or small, to the House of Van.

For many, many years now we have been building Van Equipment to our own high standard. We have engineered it with the most expert skill available and installed it with every care for the interest of the owner. The result is a record of satisfied users that stretches back through the years, and continues to multiply as days go on.

We urge you to try Van Equipment for yourself. If not a whole kitchen, then any item will prove the dependability and economy of the Van line. We'll gladly send specifications for anything that interests you.

The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

Cincinnati

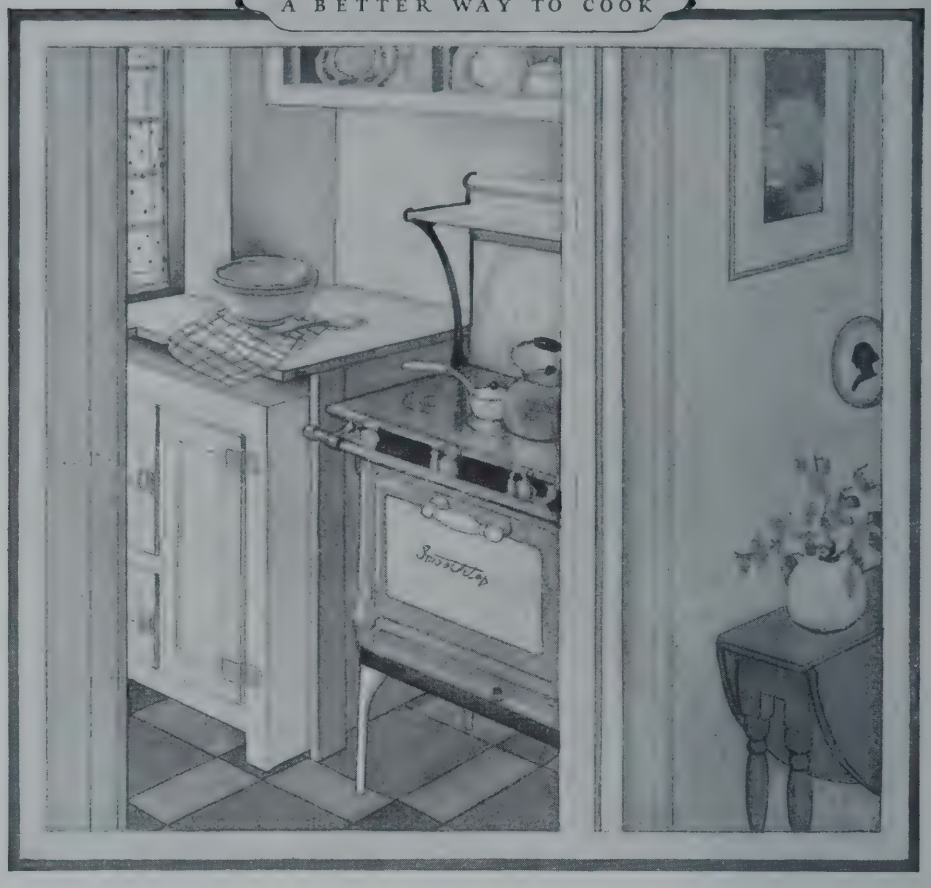
DETROIT CHICAGO LOUISVILLE NEW ORLEANS CLEVELAND ATLANTA

Grill ~ Hotel Gibson ~ Cincinnati, Ohio.

PROVIDING the equipment when, where and how it is wanted is a guiding principle with Van Engineers. They serve you as you wish to be served—providing the right equipment to meet your needs—cooperating with you to secure the utmost efficiency and economy.

This Sandwich Grill of the Hotel Gibson, Cincinnati, is a recent example of their work.

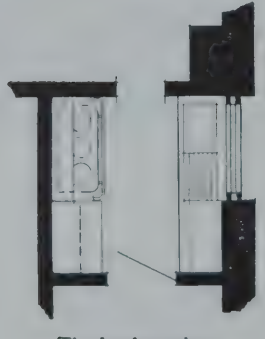
Smoothtop
GAS RANGE
A BETTER WAY TO COOK



The Manor, Tudor City
New York

"Tenants are *demanding* Smoothtops"

—John A. Olson



The kitchen plan

THIS demand is again answered in The Manor, the new Tudor City Second Unit apartment group. The Manor is another towering proof that "the smarter East Side" of New York City is expanding farther eastward. It embodies throughout the latest advances in apartment house design.

"It therefore embodies Smoothtops," said John A. Olson, President of the famous Fred F. French Company, Architects, Engineers and Builders, who planned and constructed The Manor. "More and more prospective tenants for French-designed dwellings are demanding Smoothtops in the kitchens. Happily, this is in accordance with the French plan—which is to bring about the utmost in dwelling convenience and comfort."

Authoritative opinion, such as Mr. Olson's, knows that a Smoothtop *does* "dress up" the kitchen. That it *does* save space and allow more light to enter. That it *does* give the best in cooking service. Which is undoubtedly the reason why Smoothtops are fast becoming standard in all French kitchen specifications.

To meet this general demand our Building Service Department has collected data which is of practical help in all problems of kitchen planning. Please feel free to make any inquiry. Standard Gas Equipment Corporation. 18 East 41st Street, New York.

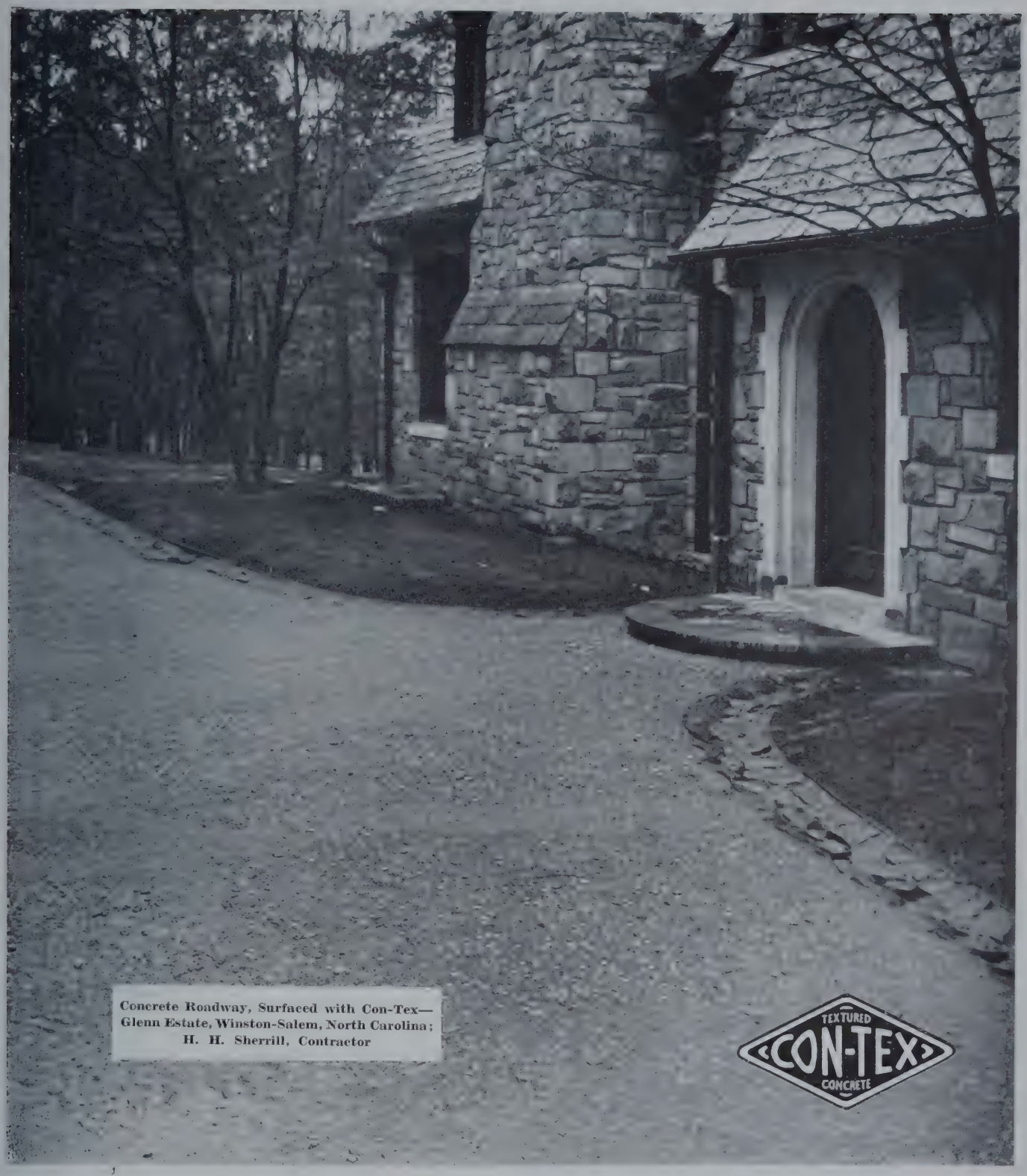
Approved by
THE AMERICAN GAS
ASSOCIATION

There is only one Smoothtop and it is fully protected by patents.

The reason why Smoothtop "works so well" is the aeration plate attached to each burner.

Pacific Coast Distributor: Northwest Gas & El. Equip. Co., Portland, Ore., San Francisco, Los Angeles

STANDARD GAS EQUIPMENT CORPORATION



Concrete Roadway, Surfaced with Con-Tex—Glenn Estate, Winston-Salem, North Carolina; H. H. Sherrill, Contractor

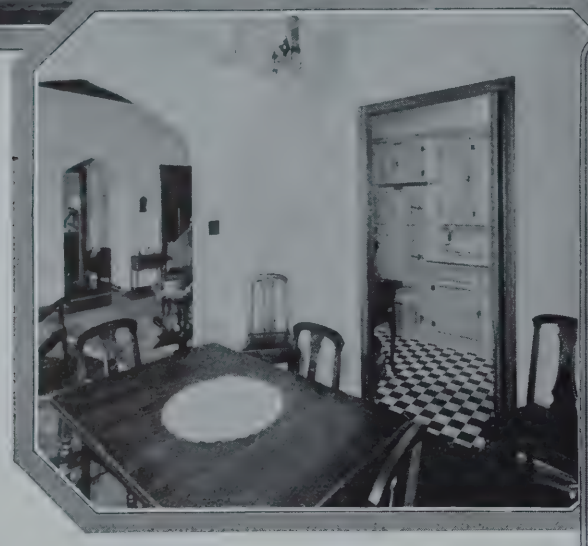
CON-TEX Treated Roadways have the permanence and stability of concrete plus the appearance and color harmonies of clean compacted stone.

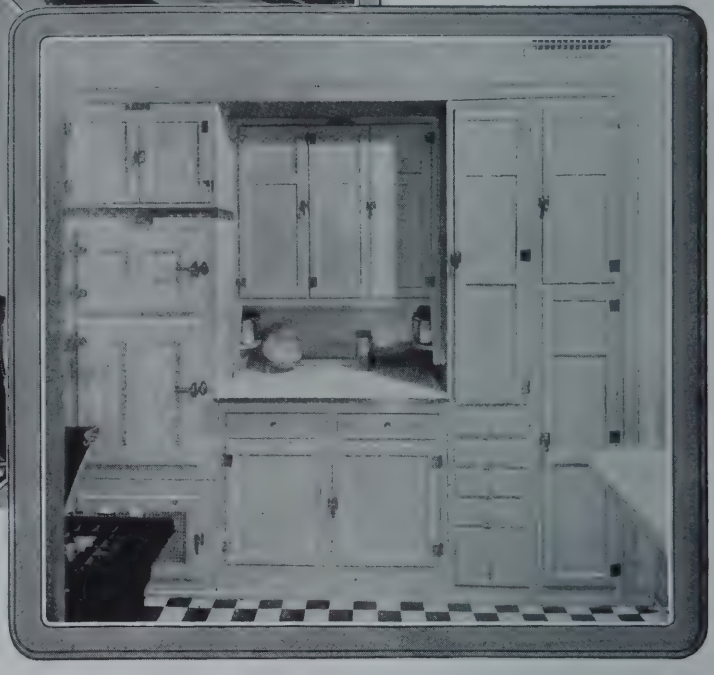
Con-Tex is a material that "improves and extends the uses of concrete." The Con-Tex Surface Treatment is simple and inexpensive, whether for finished surfaces or for bond surfaces.

Tell us your problems and let us send you detailed information.

CONCRETE SURFACE CORPORATION
342 Madison Ave., New York

Oxford Gables Apartments, 38th and Washington Blvd., Indianapolis, Indiana. Equipped with McDougall Domestic Science Built-in Kitchen Units. Architects: Pierre and Wright. Builders: A. V. Stackhouse Company.





Keeping the client *sold!*

When it comes to getting final approval of plans and specifications for the home or apartment building, and then keeping the client sold, it's largely a matter of pleasing the woman. And the surest way to do that is to design a kitchen that meets the modern demand for built-in beauty, convenience and space economy.

Designed and constructed by specialists in kitchen planning, McDougall Domestic Science Built-in units are unexcelled in high quality of material and workmanship, and their installation is guaranteed to meet your most exacting requirements. In fact, McDougall has never lost, during all its thirty-five years of pioneering leadership, a single customer because of inadequate service.

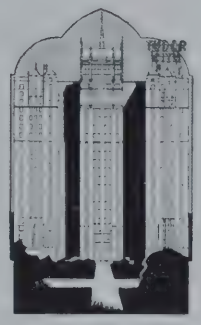
Write today for detailed information about our Architectural Service Bureau. A copy of our illustrated catalogue will also be sent on request. There is no obligation.

McDOUGALL COMPANY
Frankfort, Indiana

Chicago Office:
McDougall Company, 180 N. Michigan

McDougall
DOMESTIC SCIENCE BUILT-IN
Kitchen Units

New York Office:
Built-in Products Co., 19 W. 44th St.



100,000 *Dollars* worth of electric refrigerators *and* every one a Frigidaire

HERE we picture a section of Tudor City—one of the world's largest and most famous dwelling projects. A magnificent development structure covering several New York blocks.

Into Tudor City go one hundred thousand dollars' worth of Frigidaires!

Why was Frigidaire the choice of Fred F. French Company, Tudor City builders, over the many other makes of electric refrigerators?

Not by chance. An investment of one hundred thousand dollars is not made lightly. Competing makes were tested and compared. Intensive research was conducted by leading engineers. Laboratory methods of investigation were employed.

All proved Frigidaire superior to the others. Its absolute dependability. Its longer life. Its lower operating cost.

Fred. F. French Company and Others Investigate for You

Your problem, in proportion to investment, is no different than the Tudor City problem. When you buy a single electric refrigerator you want the greatest value for the least expenditure—and the Fred F. French Company did when they bought one hundred thousand dollars' worth of Frigidaires.

But you can't employ skilled talent to carry on exhaustive research and to make detailed comparisons of various makes. Nor is it necessary. Organizations like Fred F. French Company, great industrial concerns like Carnegie Steel, the largest ice cream manufacturers, apartment building owners—all have done this research for you. So well have their findings been followed that, today, more Frigidaires are in use than all other makes combined.

An Investment That Pays Big Returns

The investment in Frigidaire equipment for the apartment buildings you plan pays big returns to the owner. Returns in the form of better satisfied and better paying tenants—lower tenant turnover—lower property depreciation—reduced building and maintenance costs.

New, Low Prices

Huge production effects economies that are passed along in lower Frigidaire prices. Now a new Frigidaire, ready to operate from any electric outlet, for only $180 f. o. b. Dayton. Also reduced prices on other models.

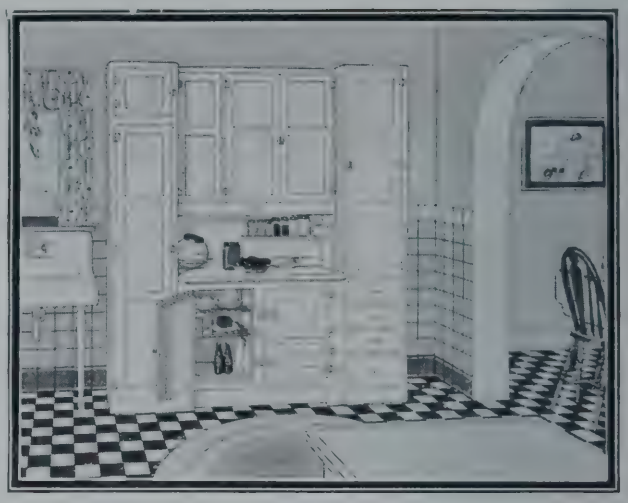
Call at the nearby showroom today. Or write for new booklet and complete information.

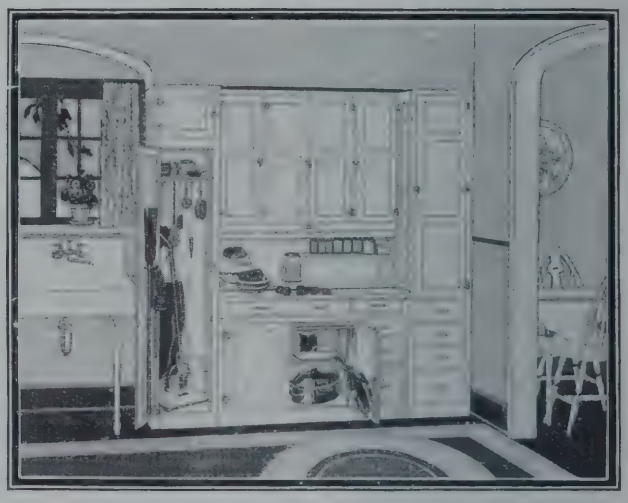
FRIGIDAIRE CORPORATION
Subsidiary of General Motors Corporation
Dept. A-209, Dayton, Ohio

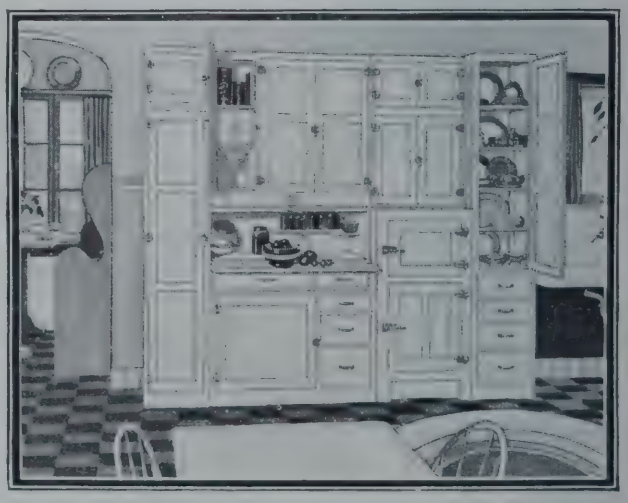
FRIGIDAIRE

A PRODUCT OF GENERAL MOTORS

What is the Price of a MODERN Step-Saving Kitchen?







WHAT is the price of scientifically developed, soundly built, beautiful kitchen equipment? We invite you to figure it out for yourself—item for item:

Set down the cost of lumber for ordinary cupboards, the cost of their hardware, paint, etc., the cost of labor on them. Then compare the total with the cost of Napanee Kitchen Equipment. You will find the figures to be practically the same. But—

Consider these extras: All hardwood lumber—every inch of it—which protects Napanee Equipment against humid kitchen atmosphere; rust-proof hardware; porcelain top work table; patented easy-fill flour bin; complete 10 piece set of crystal glassware; patented metal bread drawer; handy shelves; sliding trays, sturdy racks, convenient hooks and holders—*all arranged to centralize operations and systematize movements as no set of cupboards can.*

Is it any wonder that architects and builders are keeping us busy night and day with orders for their fine apartments and lovely homes? They tell us time and again that such apartments and homes rent more readily and sell more quickly because of Napanee equipment.

COPPES BROS. & ZOOK, *Nappanee, Indiana*

The combination illustrated at the top is made up with a Refrigerator-cabinet 40½ in. wide, a Broom Closet 16½ in. wide and a Dish Cupboard with four drawers, 16½ in. wide. The combination in the middle is made up with a 48½ in. Cabinet, and the same Broom Closet and Dish Cupboard shown in the top combination.

NAPANEE DUTCH KITCHENET

Built Like Fine Furniture

The combination shown here [at the bottom] is made up of the following Units: a 40½ in. Cabinet, a 24 in. Refrigerator with a Top Cupboard of the same width, a 16½ in. Broom Closet and a 16½ in. Dish Cupboard. The height is 85½ in. The depth is 21 in. except the Cabinet Top which is 12 in., and the Porcelain Top which is 25¾ in.

OUR GOLDEN ANNIVERSARY YEAR

COPPES BROS. & ZOOK
Nappanee, Indiana
Please send me your catalog illustrating different styles and sizes of cabinets, cupboards, side units, refrigerators, stoves, etc. [Please check square.]

I am a [ ] Builder [ ] Architect [ ] Owner AF12

Name_____

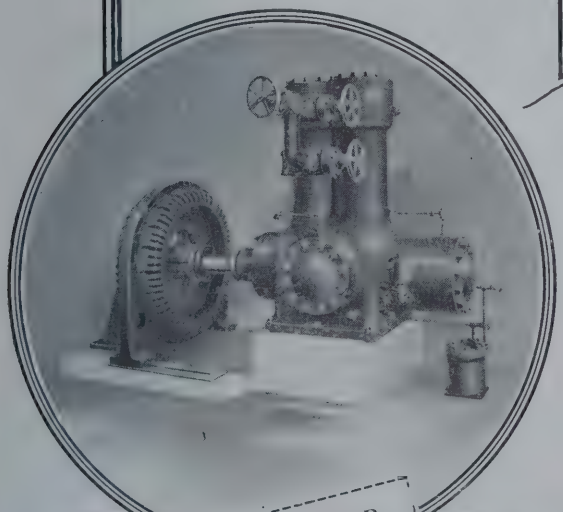
Address_____ City_____ State_____

YORK AIR COOLING AND CONDITIONING SYSTEMS FOR THEATRES

THE Keith Palace, Cleveland, Ohio.

It is significant that this "big time" 3,200-seat theatre has installed the York Carbon Dioxide system of air cooling and conditioning—a system which enables it to guarantee the theatre-goer *entertainment plus comfort.*

The Keith is one of thirty York air conditioned jobs.



The demand for air conditioning, and cooling systems in theatres, hospitals, hotels, industrial institutions, etc., is increasing. On every hand it is conceded that pure, humidified and properly tempered air is conducive to efficiency as well as comfort. The York organization specializes on this distinct phase of engineering and will gladly cooperate with and furnish pertinent data to architects interested in installations of this character. Return the attached coupon for complete information.

YORK ICE MACHINERY CORP.,
YORK, PENNA.

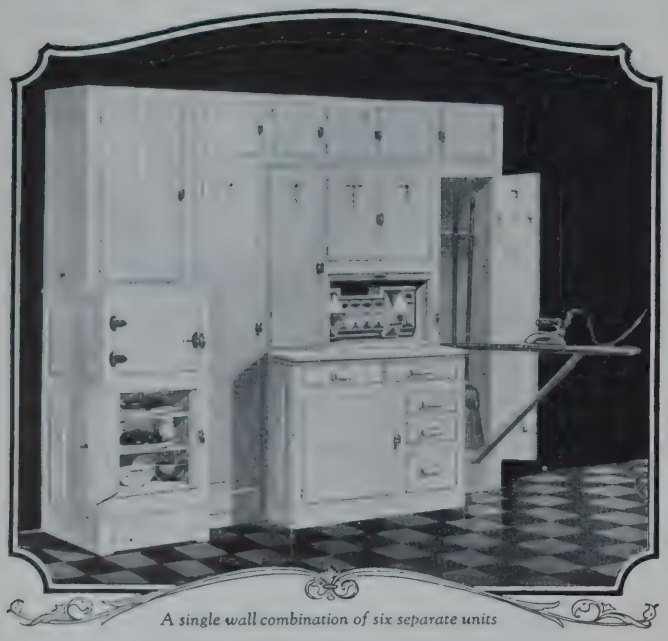
Without obligation on my part, please furnish me full information on York air conditioning equipment.

Name .....

Address .....

YORK
ICE MACHINERY CORPORATION
YORK PENNA

KITCHEN MAID
STANDARD UNIT SYSTEMS



A single wall combination of six separate units

Architects praise the flexibility and construction of these units

To the architect, the wide variety and flexibility of Kitchen Maid Units are vitally helpful factors. No matter what type or size of kitchen is being planned, there are units to cover all its equipment needs. Each unit is complete in itself—may be used alone or in a unit combination.

These units are built to the architect's highest ideals of design and craftsmanship. Of carefully selected, carefully kiln-dried woods. With rounded inside corners, smooth doors of five-ply construction, concealed hinges, triple suspension-metal-trolley drawers.

Kitchen Maid Units offer a large list of other important advantages over ordinary kitchen equipment methods. Yet standardization renders their cost installed surprisingly low. Write for catalogue fully describing all the units with dimensional drawings and prices.

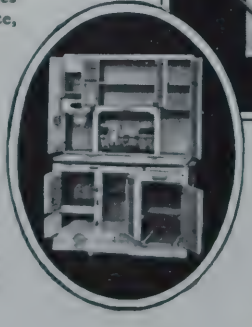
WASMUTH-ENDICOTT CO., 1812 Snowden St., Andrews, Ind.

"Let the Kitchen Maid Be Your Kitchen Aid"

KITCHEN MAID
STANDARD UNIT SYSTEMS

Representatives in all principal cities
If in Canada, address Branch Office,
Waterloo, Ontario

Rounded inside corners and 5 ply smooth door construction—exclusive in Kitchen Maid Units



Broom Closet and Folding Ironing Board Combination.

Left—Compact No. 656—for the modern efficiency kitchen.

A Portfolio on Refrigeration

EVERY architect should have in his files for immediate reference the new portfolio on refrigerators which has just been prepared by the engineering department of McCray.

Complete, accurate, and thorough information regarding refrigerators of every type and for every purpose—both stock portable, and built-in refrigerators and cooling rooms—is here at your fingertips.

Send for your copy now; no obligation is involved.

McCray Refrigerator Sales Corporation
764 Lake St., Kendallville, Ind.
Salesrooms in All Principal Cities
See Telephone Directory

McCRAY
REFRIGERATORS
for all purposes

Let Colt Engineers help you plan that Dishwashing Pantry!

NO matter what the capacity or size of the kitchen you are planning, Colt Engineers are at your service—ready to advise you, not only which particular Colt Autosan is best suited for your requirements, but also how the pantry and table layout may be planned for maximum efficiency. May we send you our "Architect's Packet" which gives facts and figures about the entire Colt line from Model "S-1" to the giant "C-3"?

Colt's Patent Fire Arms Mfg. Co.
Hartford, Conn. U.S.A.

COLT AUTOSAN
THE MACHINE THAT WASHES TABLEWARE 'CLEAN'

HORN-WATER-PROOFINGS

PROBLEM IX

Waterproofing Expansion Joints and Cracks In Concrete Floor Slabs

Leakage through Expansion Joints and Cracks in Concrete Floor Slabs, and consequent damage to property, results from failure to seal these openings with a permanently efficient material.

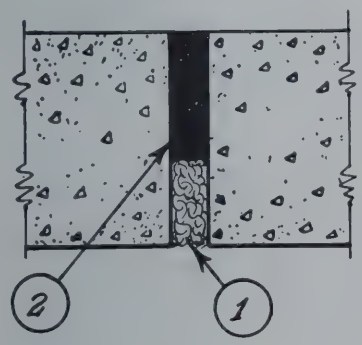


Figure I.
STRAIGHT JOINT
1. Oakum
2. HORN'S EXPANSION JOINT CEMENT

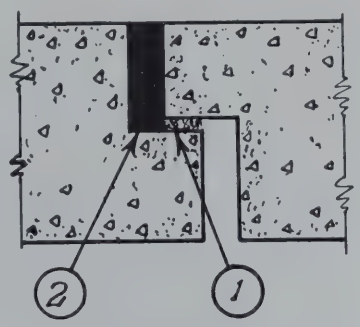


Figure II.
SLIP JOINT
1. Oakum
2. HORN'S EXPANSION JOINT CEMENT

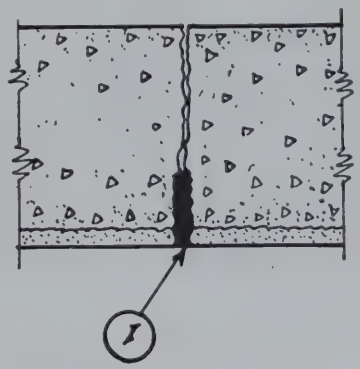


Figure III.
CRACK IN CONCRETE
1. HORN'S EXPANSION JOINT CEMENT

Solution

The solution of this problem is expressed in the following specifications which meet the requirements of modern building design and construction practice with respect to both methods and materials.

SPECIFICATIONS

(1) *Waterproofing Expansion Joints:* Picked oakum shall be driven into the expansion joint for a depth of 4 inches after which the sides of the joint above the oakum shall be coated with Dehydratine No. 1, brush coating. The joint shall then be filled with Horn's Expansion Joint Cement which shall be poured hot.

(2) *Waterproofing Cracks in Concrete Slabs:* All cracks in floor slabs shall be cut out ¾-inch wide and for a depth of at least 1 inch. The sides of the cracks, for the depth cut out shall then be coated with Dehydratine No. 1, brush coating after which the cracks shall be filled with Horn's Expansion Joint Cement which shall be poured hot.

NOTE: HORN'S EXPANSION JOINT CEMENT is a solid asphalt in conjunction with vulcanized oils that must be melted to be used. It is thoroughly waterproof; adheres perfectly to the sides of the joint and remains permanently efficient. This material remains tough and elastic from O. deg. F. to 160 deg. F.; and will not dry out nor run in summer heat, maintaining a waterproof joint at all times.

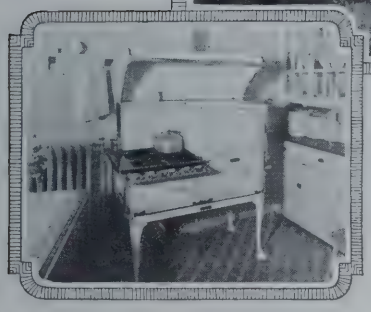
Executive Offices
101 Park Avenue,
New York City

A. C. Horn Company

Works
Long Island City,
N. Y.

"IT takes nine tailors to make a man." It takes many types of men to plan and build a building. Particularly is this true when that building is a store. It must be architecturally perfect but deeper than this, it must have "beauty with a business sense." This brings into play the necessity for specialized talent. This need has been created by circumstances and is supplied by our staff of store planners who have 25 years experience as a background. They are ready to serve architects as part of their staff or in any other capacity the architect may elect. They are always available upon request.

GRAND RAPIDS STORE EQUIPMENT CORPORATION
GRAND RAPIDS, MICHIGAN
Succeeding
THE GRAND RAPIDS SHOW CASE COMPANY WELCH-WILMARTH CORPORATION
Branch offices and representatives in most principal cities
Factories: GRAND RAPIDS; PORTLAND, ORE.; BALTIMORE; NEW YORK CITY



Residence of Mr. John G. Tritton, The Hills Drive, Utica, N. Y., with New Process Red Wheel Gas Range in kitchen.

Architects: Hugh R. Jones Co.
Builders: Kinne & Frank

Makeshift Kitchens Will Not Do

Unless the Gas Range has a RED WHEEL, it is NOT a LORAIN.

MODERN KITCHENS must be planned for beauty and for convenient use. Home-making women insist upon kitchens small enough for step-saving and large enough for the correct placing of adequate labor-saving equipment, including a Gas Range with Lorain Self-regulating Oven.

The Lorain Red Wheel makes successful cooking easy, because it measures and automatically maintains the heat of the oven at any desired temperature.

Lorain is the first thermostat ever designed for the automatic control of gas range oven heat. Women know about the Lorain Red Wheel. They have seen the Lorain advertisements in their favorite magazines for more than eight years. In more than 2200 schools and colleges, Red Wheel Gas Ranges are used in home economics laboratories to teach time and temperature oven cookery.

Lorain Red Wheel Self-regulating Ovens are built only in the following six famous makes of Gas Ranges: **Reliable, Clark Jewel, Dangler, Direct Action, New Process** and **Quick Meal.** Each of these lines offers a wide variety of sizes, styles and finishes, designed for beauty and utility.

For specifications see Sweet's Catalogue, 22nd Edition, or send for our Handbook on Gas Ranges for Architects and Builders.

AMERICAN STOVE COMPANY, 444 Chouteau Avenue, St. Louis, Mo.
Largest Makers of Gas Ranges in the World

LORAIN

WHERE MONEL METAL SHINES

Monel Metal equipment in the Dining and Service Building of Girard College, Philadelphia, Pa., mfd. and installed by L. BARTH & SON, *New York. Architect,* JOHN T. WINDRIM, *Philadelphia.*

GIRARD COLLEGE

PHILADELPHIA

Where kitchens gleam with Monel Metal surfaces

THE more-than-ample endowment, and consequent financial position of Girard College enables this institution to select the very finest equipment for every department.

It is significant, therefore, that the kitchens and food service departments of this famous Philadelphia school are equipped with Monel Metal.

Monel Metal Dishwashing Machines in the Dining and Service Building of Girard College, mfd. by the FASPRAY CORP. *of Red Bank, N. J.*

With many different materials to choose from—with financial resources that permit the use of the finest materials—Girard College specified Monel Metal.

Monel Metal is the most economical as well as the most attractive of the materials available for food service equipment. It is easy to clean. It will not rust, it resists corrosion. It stands up for years and years under the use and abuse of rigorous service.

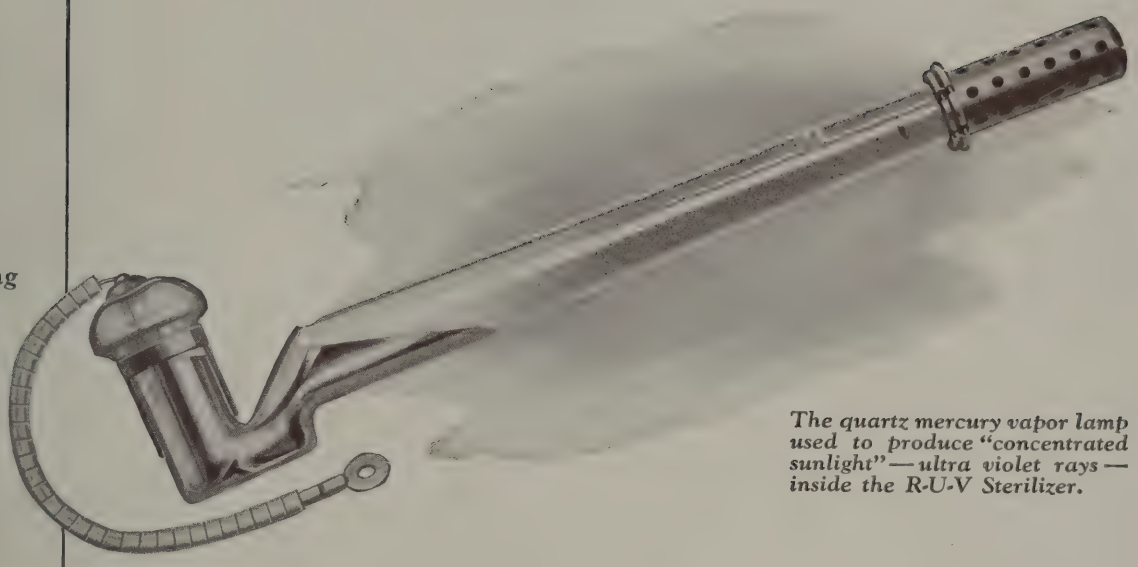
Monel Metal is the accepted metal for clinical and laundry as well as food service equipment. It is the logical material for you to use when planning new installations. You can best protect the interests of your clients by specifying long-lasting Monel Metal, wherever cleanliness must be combined with long life.

SEND FOR SPECIAL SERIES OF ARCHITECTURAL FOLDERS

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

MONEL METAL

THE INTERNATIONAL NICKEL COMPANY (INC.) 67 WALL STREET, NEW YORK CITY



The quartz mercury vapor lamp used to produce "concentrated sunlight"—ultra violet rays—inside the R-U-V Sterilizer.

Purifying Water with "Concentrated Sunlight"

Sunlight kills disease germs because it contains ultra violet light. R-U-V Sterilizers use ultra violet light to kill disease germs in recirculating systems for swimming pool water or drinking water.

A quartz mercury-vapor lamp inside the R-U-V Sterilizer floods each drop with concentrated ultra violet.

R-U-V Sterilizers can be hooked into an electric circuit. Their operation is automatic and as simple as turning on and off an electric light. There is no dosing of the water, no constant regulating of apparatus.

Corrosion and the resulting rapid replacements are eliminated. Results are positive.

Write to any of the installations listed in the side column. They will tell you what R-U-V does in actual operation.

R-U-V is keeping the swimming water pure in the pools of:

U. S. Naval Academy, (new pool), Annapolis, Md.
University of Colorado, Boulder, Colo.
Vassar College, Poughkeepsie, N. Y.
Catholic University, Washington, D. C.
4 Public School Pools, Tulsa, Okla.
9 Public School Pools, Kansas City, Mo.
University of Chicago, Chicago, Ill.
Culver Military Academy, Culver, Indiana
Kansas City Athletic Club, Kansas City, Mo.
United Israel Nurses' Home, 48th Street, Brooklyn, N.Y.
Penn Athletic Club, Philadelphia, Penn.
Union League Club, Chicago, Ill.

And Many Others

And the drinking water supplies for:

Atchison, Topeka & Santa Fe R. R., Albuquerque, N. M.
Carnegie Steel Co., Pittsburgh, Penn.
General Electric Co., Association Island, Sacketts Harbor, N. Y.
Sprague, Warner & Co., Chicago, Ill.
Goodyear Tire & Rubber Co., Akron, Ohio
Goodrich Transit Co., Chicago, Ill.
Miller Hotel Co., Fort Des Moines, Iowa
First National Bank Building, Detroit, Mich.
General Motors, Remy Electric Division, Anderson, Ind.

And Many Others

PURE R-U-V WATER

Ultra Violet Ray Water Sterilization

R-U-V Company, Inc.
383 Madison Ave.
New York, N. Y.

James B. Clow & Sons
201-299 N. Talman Avenue
Chicago, Ill.

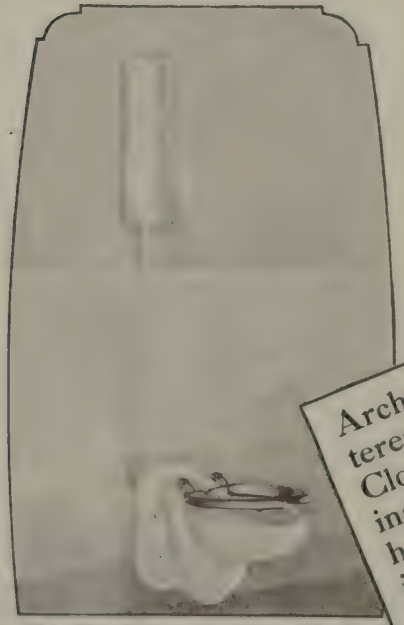
Will These Forgetful

Do they control your

Children are forgetful. They don't realize that the water closet is the most important school sanitation fixture. Children don't know how health is endangered when the closet stands unflushed—sending forth disease-bearing flies, and bad odors.

Their forgetful control, is a gamble as to whether the toilet room will be a healthful—or a breeding place for contamination and disease.

The Clow Automatic Closet takes the hygiene responsibility—and makes good. After every occupa-



The Clow Automatic closet with closed top tank. Wall hung style allows cleaning underneath.

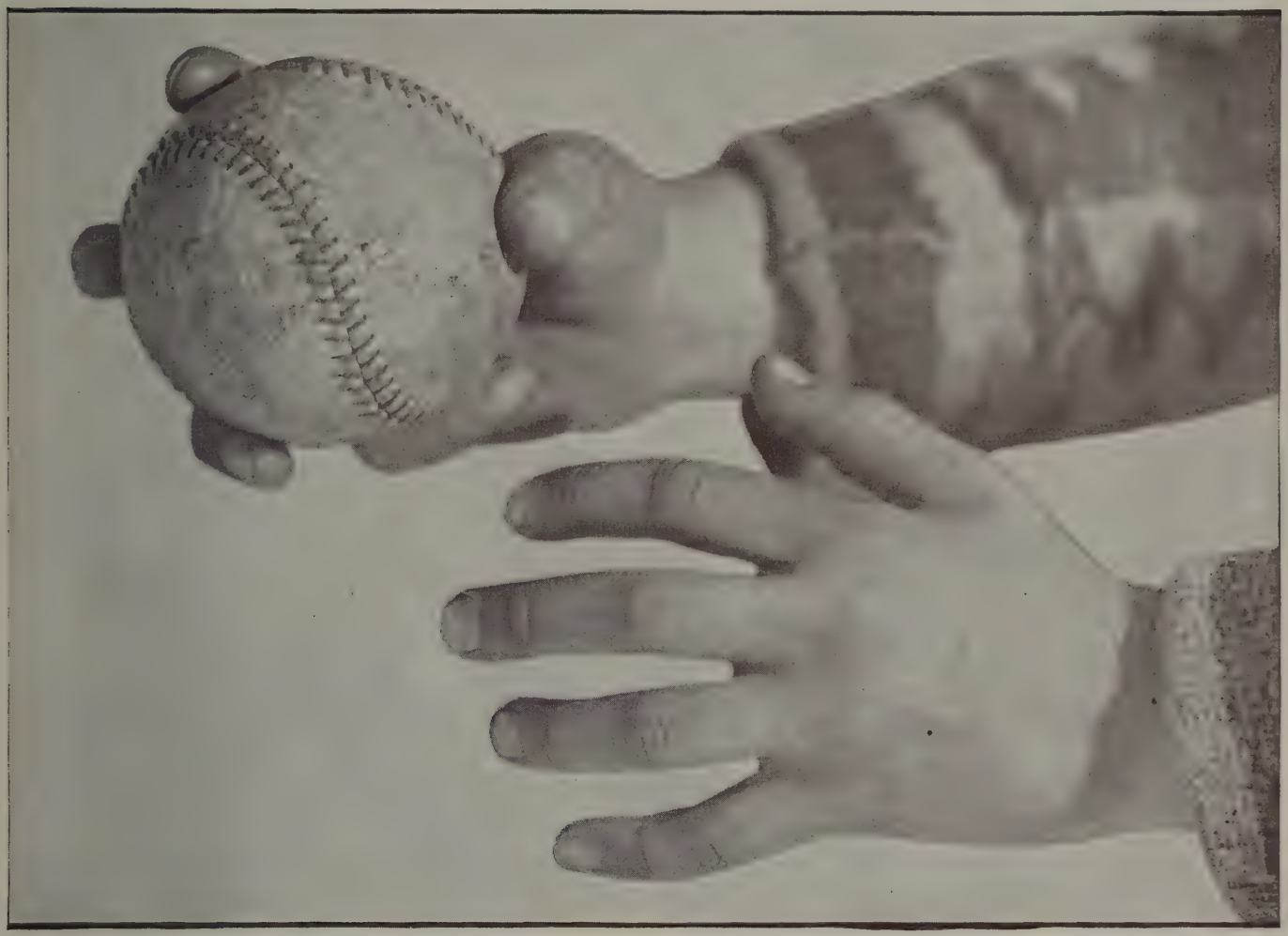
Architects will be interested in our new Clow school plumbing booklet. It shows how Clow Automatics are assuring sanitation to schools, industrial plants, and public buildings. Send for a copy today

CLOW

Never,

Forty-Eight Styles,

Childish Hands Remember?



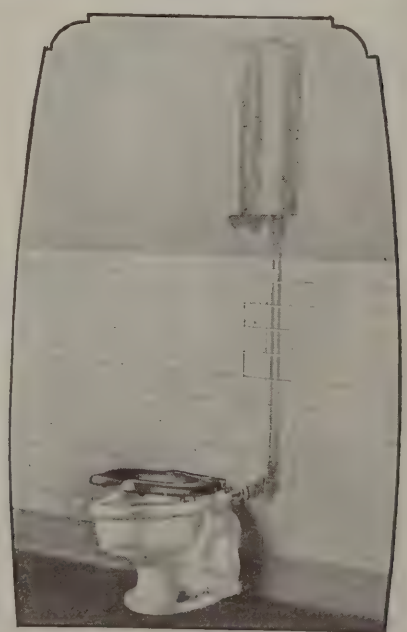
school sanitation?

tion it flushes itself with the pressure of a forty foot standpipe. And only the Clow bowl distributes equally to rim and trap, this high pressure flush.

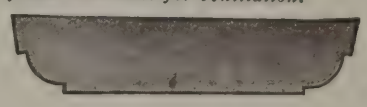
The Clow-Madden valve is simple. So simple that virtually nothing can go wrong. It never forgets. With but two moving parts it has no complicated valves or floats to wear out or break.

Let the Clow school plumbing booklet tell you how to remove school sanitation from the forgetful hands of children.

James B. Clow & Sons, 201-299 N. Talman Ave., Chicago.



Clow Automatic with closed top tank concealed behind back wall. This back wall forms a corridor for ventilation.



AUTOMATIC

never forgets

Heights and Types to Meet Your Requirements

The Public Service Co. of New Jersey.

Interior lighting by Sol-Lux.

Re-lamp *without* Re-globing!

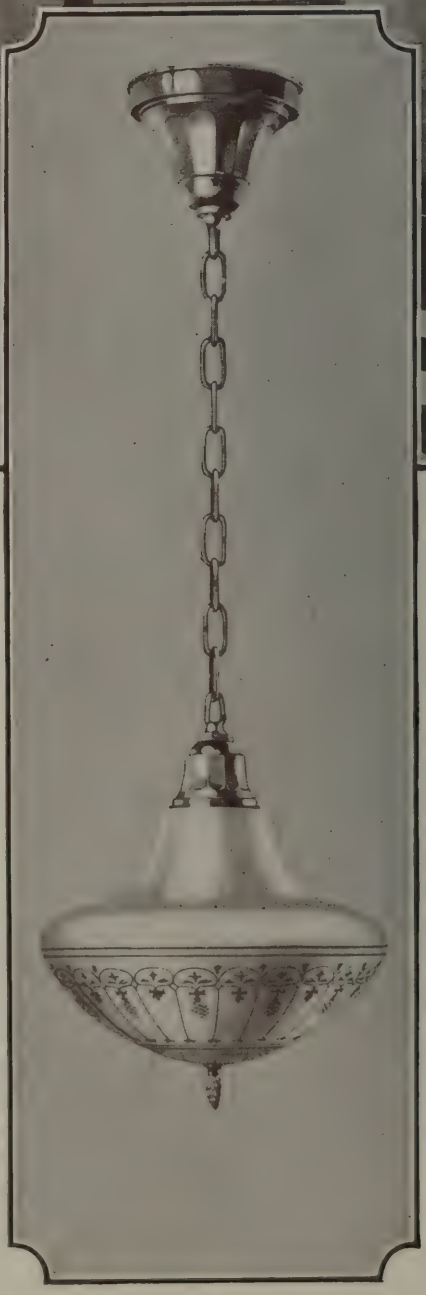
JUST to replace a burned-out lamp in the ordinary globe may let your client in for quite a bit of expense. The set screws must be loosened, the globe must be removed, the dead lamp taken out, the new one inserted, the globe replaced, and, finally, the set screws tightened. Not surprising if, somewhere along the line, the globe is dropped or cracked.

Specify Sol-Lux and the globe need not be handled at all. Merely tilt out the special cap, take out the lamp, put in another, and tilt the cap back. That's all there is to it. Minutes are saved; glass is preserved.

The globe needn't be removed for cleaning, either. A washing of the outside surface keeps everything shipshape, for dirt or insects can't get inside.

Ask the lighting experts at the nearest Westinghouse office.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
MERCHANDISING DEPARTMENT, SOUTH BEND WORKS, SOUTH BEND, IND.



Westinghouse

Selected List of Manufacturers' Publications

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum*, 383 Madison Ave., New York, or the manufacturer direct, in which case kindly mention this publication.

ACOUSTICS

The Celotex Co., Chicago.
Acousti-Celotex. 16 pp., 8½ x 11 in. Illustrated brochure on a valuable material for facing walls and ceilings.
Specifications and Details for application and decoration of Acousti-Celotex, 11 pp., 8½ x 11 in.

Johns-Manville Corp., Madison Ave. & 41st St., New York, N. Y.
Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in Churches, schools, hospitals, office buildings and other places.

U. S. Gypsum Co., 205 W. Monroe St., Chicago, Ill.
A Scientific Solution of an Old Architectural Problem. Folder 6 pp., 8½ x 11 in. Describes Sabinite Acoustical Plaster.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geohegan, 535 West Broadway, New York, N. Y.
General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturers' name and without). Detail ¼ in. scale for each telescopic model and special material-handling section.
G. & G. Telescopic Hoist. Brochure, 24 pp., 8½ 11 ins. Illustrated. Electric and hand power models; watertight sidewalk doors; automatic opening, closing, and locking devices.

BASEMENT WINDOWS

Genfire Steel Company, Youngstown, Ohio.
Architectural Details. Booklet, 62 pp., 8½ x 11 ins. Details on steel windows.

Truscon Steel Co., Youngstown, Ohio
Truscon Copper-Steel Basement Windows. Booklet, 8 pp., 8½ x 11 in. Illustrated with installation details. Specifications and construction details.

BATHROOM FITTINGS

A. P. W. Paper Co., Albany, N. Y.
Onliwon for Fine Buildings. Folder, 8 pp. 3¼ x 6 in. Illustrated. Deals with toilet paper fittings of metal and porcelain.
Architects' File Card. 8½ x 11 in. Illustrated. Filing card on toilet paper and paper towel cabinets.
A Towel Built for Its Job. Booklet, 8 pp. 4¼ x 9⅝ in. Illustrated. Paper Towel System and Cabinets.
Cabinets and Fixtures. Booklet, 31 pp. 5¾ x 4¾ in. Illustrated. Catalog and price list of fixtures and cabinets.

Morton Mfg. Co., 5163 West Lake Street, Chicago.
Bathroom Cabinets for Homes, Apartments, etc. General Catalog, 20 pp., 8 x 10¾ ins. Illustrated. Specifications, installation details, etc.
Booklet, 12 pp., 3¼ x 6¼ ins. Illustrated. Deals with four models of bathroom cabinets.

BRICK

Acme Brick Company, Ft. Worth, Texas.
Series No. 1
Architectural designs rendered in Acme Brick. Booklet 11 x 8½ in. Illustrated. A series of 48 photogravures showing architectural designs rendered in Acme brick. Illustrations show the various types of buildings erected in the Southwest in recent years. Sent free to architects applying on their office stationery.

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.
Brickwork in Italy. 298 pages size 7½ x 10½ in., an attractive and useful volume on the history and use of brick in Italy from ancient to modern times, profusely illustrated with 69 line drawings, 300 half-tones, and 20 colored plates with a map of modern and XII century Italy. Bound in linen will be sent postpaid upon receipt of $6.00. Half Morocco, $7.00.
Industrial Buildings and Housing. Bound volume, 112 pp. 8½ x 11 in. Profusely illustrated. Deals with the planning of factories and employes' housing in detail. Suggestions are given for interior arrangements, including restaurants and rest rooms. Price $2.

Common Brick Mfrs. Assn. of America, 2134 Guarantee Title Bldg., Cleveland.
Brick; How to Build and Estimate. Brochure, 96 pp., 8½ x 11 ins. Illustrated. Complete data on use of brick.
The Heart of the Home. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Price 25 cents. Deals with construction of fireplaces and chimneys.
Skintled Brickwork. Brochure, 15 pp., 8½ x 11 ins. Illustrated. Tells how to secure interesting effects with common brick.
Building Economy. Monthly magazine, 22 pp., 8½ x 11 ins. Illustrated. $1 per year, 10 cents a copy. For architects, builders and contractors.

BUILDING, STEEL PRODUCTS FOR

Truscon Steel Company, Youngstown, Ohio.
Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

CEMENT

Carney Company, The, Mankato, Minn.
What Twelve Men Said About Carney. Booklet, 8½ x 11 ins., Illustrated. Opinions of well known architects and builders of Carney Cement used for mortar.

Cement Gun Company, Inc., Allentown, Pa.
Gunite Bulletins. Sheets 6 x 9 in. Illustrated. Bulletins on adaptability of "Gunite," a sand and cement product, to construction work.

Kosmos Portland Cement Company, Louisville, Ky.
Kosmortar for Enduring Masonry. Folder 6 pp., 3½ x 6½ in. Data on strength and working qualities of Kosmortar.
Kosmortar, the Mortar for Cold Weather. Folder, 4 pp., 3⅜ x 6½ in. Tells why Kosmortar should be used in cold weather.

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.
BRIXMENT for Perfect Mortar. Self-filing handbook 8½ x 11 inches. 16 pp. Illustrated. Contains complete technical description of BRIXMENT for brick, tile and stone masonry, specifications, data and tests.

Pennsylvania-Dixie Cement Corp'n., 131 East 46th St., New York.
Celluloid Computing Scale for Concrete and Lumber, 4⅝ x 2½ ins. Useful for securing accurate computations of aggregates and cement; also for measuring lumber of different sizes.

CONCRETE BUILDING MATERIALS

Celite Products Co., 1320 South Hope St., Los Angeles.
Better Concrete; Engineering Service Bulletin X-325. Booklet, 16 pp., 8½ x 11 ins. Illustrated. On use of Celite to secure workability in concrete, to prevent segregation and to secure water-tightness.
Economic Value of Admixtures. Booklet, 32 pp., 6⅛ x 9⅛ ins. Reprint of papers by J. C. Pearson and Frank A. Hitchcock before 1924 American Concrete Institute.

Concrete Surface Corporation, 342 Madison Ave., New York
Bonding Surfaces on Concrete. Booklet, 12 pp., 8 x 11 in., illustrated. Deals with an important detail of building.

Dovetail Anchor Slot Co., 149 West Ohio Street, Chicago.
Dovetail Masonry Anchoring System. Folder, 4 pp., 8½ x 11 ins. Illustrated. Data on a system of anchoring masonry to concrete.

The Master Builders Co., 7016 Euclid Avenue, Cleveland.
Concrete Floor Treatments-Specification Manual. Booklet, 23 pp. 8½ x 11 ins. Illustrated. Valuable work on an important subject.
Color mix, colored Hardened Concrete Floors (Integral). Brochure, 16 pp., 8½ x 11 ins. Illustrated. Data on coloring for floors.
Waterproofing and Damp proofing Specification Manual. Booklet, 18 pp., 8½ x 11 ins. Deals with methods and materials used.
Dycrome, Concrete Surface Hardner in Colors. Folder, 4 pp., 8 x 11 ins. Illustrated. Data on a new treatment.

National Building Units Corporation, 1600 Arch Street, Philadelphia.
Durability and Utility of Straub Cinder Building Blocks. Brochure, 14 pp., 8 x 11 ins. Report on this material by Pittsburgh Testing Laboratories.
Sound Absorption of Cinder Concrete Building Units. Booklet, 8 pp., 8 x 11 ins. Illustrated. Results of tests of absorption and transmission of sound through Straub building blocks.
Philadelphia. Cinder Concrete Building Units. Brochure, 36 pp., 8¼ x 10¾ ins. Illustrated. Full data on an important building material.

Kosmos Portland Cement Company, Louisville, Ky.
High Early Strength Concrete, Using Standard Kosmos Portland Cement. Folder, 1 p., 8½ x 11 in. Complete data on securing high strength concrete in short time.

Solvay Process Co., Syracuse, N. Y.
Solvay Calcium Choride in Concrete Construction. Brochure, 22 pp., 7 x 10 in. Illustrated. Deals with an important ingredient for concrete.

CONCRETE COLORINGS

A. C. Horn Company, Long Island City, N. Y.
Keramic Catalog. Booklet. 8½ x 11 in. 26 pp. A magnificent brochure, illustrated in color, describing a valuable line of specialties for use with concrete floors—colorings, hardeners, waterproofing, etc.

CONSTRUCTION, FIREPROOF

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fireproof floor construction.

Northwestern Expanded Metal Co., 1234 Old Colony Building, Chicago, Ill.
Northwestern Expanded Metal Products. Booklet. 8½ x 10¾ in. 16 pp. Fully illustrated, and describes different products of this company, such as Kno-burn metal lath, 20th Century Corrugated. Plaster-Sava and Longspan lath channels, etc.
A. I. A. Sample Book. Bound volume, 8½ x 11 ins., contains actual samples of several materials and complete data regarding their use.

DAMPPROOFING

Philip Carey Co., Lockland, Cincinnati, Ohio.
Architects' Specifications for Carey Built-Up Roofing. Booklet. 8 x 10¾ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.
Carey Built-Up Roofing for Modern School Buildings. Booklet. 8 x 10¾ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 145*

DAMPPROOFING—Continued

Genfire Steel Company, Youngstown, Ohio.
Waterproofing Handbook. Booklet. 8½ x 11 in. 72 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete. Free distribution.

A. C. Horn Company, Long Island City, N. Y.
Waterproofing. 9½ x 11½ in. Folder. Contains folders giving data on excellent waterproofing and dampproofing materials.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Specification Sheet, 8½ x 11 in. Descriptions and specifications of compounds for dampproofing interior and exterior surfaces.

The Vortex Mfg. Co., Cleveland, Ohio.
Par-Lock Specification "Forms A and B" for dampproofing and plaster key over concrete and masonry surfaces.
Par-Lock Specification "Form J" for dampproofing tile wall surfaces that are to be plastered.
Par-Lock Dampproofing. Specification Forms C, F, I and J. Sheets 8½ x 11 ins. Data on gun-applied asphalt dampproofing for floors and walls.

DOORS AND TRIM, METAL

The American Brass Company, Waterbury, Conn.
Anaconda Architectural Bronze Extruded Shapes. Brochure, 180 pp., 8½ x 11 in., illustrating and describing more than 2,000 standard bronze shapes of cornices, jamb casings, mouldings, etc.

The Compound & Pyrono Door Company, St. Joseph, Mich.
Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.
Pyrono details in sheet form for tracing.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Fire Doors and Hardware, Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

DUMBWAITERS

Sedgwick Machine Works, 151 West 15th St., New York.
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.
Catalog and pamphlets, 8½ x 11 in. Illustrated. Valuable data on dumb waiters.

ELECTRICAL EQUIPMENT

Frank Adam Electric Company, St. Louis, Mo.
Catalog No. 35—1925. Panelboards—Steel Cabinets. 7¾ x 10½ in. 64 pp. Illustrates and describes sectionally built panelboards, an important line of steel cabinets, and the fittings which go with them.

General Electric Co., Schenectady, N. Y.
"Electrical Specification Data for Architects. Brochure, 36 pp., 8 x 10½ ins., illustrated. Data regarding G. E. wiring materials and their use.
"The House of a Hundred Comforts." Booklet, 40 pp., 8 x 10½ ins. Illustrated. Dwells on importance of adequate wiring.

Pick & Company, Albert, 208 West Randolph St., Chicago, Ill.
School Cafeterias. Booklet. 9 x 6 in. Illustrated. The design and equipment of school cafeterias with photographs of installation and plans for standardized outfits.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Electric Power for Buildings. Brochure, 14 pp., 8½ x 11 ins. Illustrated. A publication important to architects and engineers.
Variable-Voltage Central Systems as applied to Electric Elevators. Booklet, 13 pp., 8½ x 11 ins. Illustrated. Deals with an important detail of elevator mechanism.
Modern Electrical Equipment for Buildings. Booklet, 8½ x 11 ins. Illustrated. Lists many useful appliances.
Electrical Equipment for Heating and Ventilating Systems. Booklet, 24 pp., 8½ x 11 ins. Illustrated. This is "Motor Application Circular 7379."
Westinghouse Panelboards and Cabinets (Catalog 42-A). Booklet, 32 pp., 8½ x 11 ins. Illustrated. Important data on these details of equipment.
Beauty; Power; Silence; Westinghouse Fans (Dealer Catalog 45). Brochure, 16 pp., 8½ x 11 ins. Illustrated. Valuable information on fans and their uses.
Electric Range Book for Architects (A. I. A. Standard Classification 31 G-4). Booklet, 24 pp., 8½ x 11 ins. Illustrated. Cooking apparatus for buildings of various types.
Westinghouse Commercial Cooking Equipment (Catalog 280). Booklet, 32 pp., 8½ x 11 ins. Illustrated. Equipment for cooking on a large scale.
Electric Appliances (Catalog 44-A). 32 pp., 8½ x 11 ins. Deals with accessories for home use.

ELEVATORS

Otis Elevator Company, 260 Eleventh Ave., New York, N. Y.
Otis Push Button Controlled Elevators. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.
Otis Geared and Gearless Traction Elevators of All Types. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.
Escalators. Booklet. 8½ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theaters and industrial buildings. Also includes elevators and dock elevators.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th St., New York, N. Y.
Catalog and descriptive pamphlets, 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.
Catalog and pamphlets. 8½ x 11 in. Illustrated. Important data on different types of elevators.

FIREPROOFING—See also Construction, Fireproof

Concrete Engineering Co., Omaha, Nebr.
"Handbook of Fireproof Construction." Booklet, 53 pp., 8½ x 11 in. Valuable work on methods of fireproofing.

Genfire Steel Company, Youngstown, Ohio.
Fireproofing Handbook, 8½ x 11 in. 64 pp. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

North Western Expanded Metal Co., 407 South Dearborn Street, Chicago.
A. I. A. Sample Book. Bound volume, 8½ x 11 ins. Contains actual samples of several materials and complete data regarding their use.

FLOOR HARDENERS (CHEMICAL)

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York, N. Y.
Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

FLOORS—STRUCTURAL

Truscon Steel Co., Youngstown, Ohio
Truscon Locktyle. Booklet, 8½ x 11 in., 8 pp. Illustrations of material and showing methods of application.
Truscon Floretyle Construction. Booklet, 8½ x 11 in., 16 pp. Illustrations of actual jobs under construction. Lists of properties and information on proper construction. Proper method of handling and tables of safe loads.

FLOORING

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Armstrong's Cork Tile Floors. Booklet, 7¾ x 10½ in. 30 pp. An illustrated work on cork flooring.

Armstrong Cork Co. (Linoleum Division), Lancaster, Pa.
Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 40 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.
Armstrong's Linoleum Pattern Book, 1927. Catalog. 3½ x 6 in. 272 pp. Color Plates. Reproduction in color of all patterns of linoleum and cork carpet in the Armstrong line.
Quality Sample Book. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleums.
Linoleum Layer's Handbook. 5 x 7 in. 32 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.
Enduring Floors of Good Taste. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Barber Asphalt Co., Philadelphia.
Specifications for Applying Genasco Asphalt Mastic. Booklet. 8 x 10½ in. Directions for using Asphalt Mastic for flooring.

Blabon Company, Geo. W., Nicetown, Philadelphia, Pa.
Planning the Color Schemes for Your Home. Brochure illustrated in color; 36 pp., 7½ x 10½ in. Gives excellent suggestions for use of color in flooring for houses and apartments.
Handy Quality Sample Folder of Linoleums. Gives actual samples of "Battleship Linoleum," cork carpet, "Feltex," etc.
Blabon's Linoleum. Booklet illustrated in color; 128 pp., 3½ x 8½ in. Gives patterns of a large number of linoleums.
Blabon's Plain Linoleum and Cork Carpet. Gives quality samples, 3 x 6 in. of various types of floor coverings.

Bonded Floors Company, Inc., 1421 Chestnut St., Philadelphia, Pa.
A series of booklets, with full color inserts showing standard colors and designs. Each booklet describes a resilient floor material as follows:
Battleship Linoleum. Explains the advantages and uses of this durable, economical material.
Marble-ized (Cork Composition) Tile. Complete information on cork-composition marble-ized tile and the many artistic effects obtainable with it.
Treadlite (Cork Composition) Tile. Shows a variety of colors and patterns of this adaptable cork composition flooring.
Natural Cork Tile. Description and color plates of this super-quiet, resilient floor.
Practical working specifications for installing battleship linoleum, cork composition tile and cork tile.

Carter Bloxonend Flooring Co., Keith & Perry Bldg., Kansas City, Mo.
Bloxonend Flooring. Booklet 3¼ x 6¼ in. 20 pp. Illustrated. Describes uses and adaptability of Bloxonend Flooring to concrete, wood or steel construction, and advantages over loose wood blocks.
File Folder, 9⅜ x 11¾ in. For use in connection with A. I. A. system of filing. Contains detailed information on Bloxonend Flooring in condensed, loose-leaf form for specification writer and drafting room. Literature embodied in folder includes standard Specification Sheet covering the use of Bloxonend in general industrial service and Supplementary Specification Sheet No. 1, which gives detailed description and explanation of an approved method for installing Bloxonend in gymnasiums, armories, drill rooms and similar locations where maximum resiliency is required.

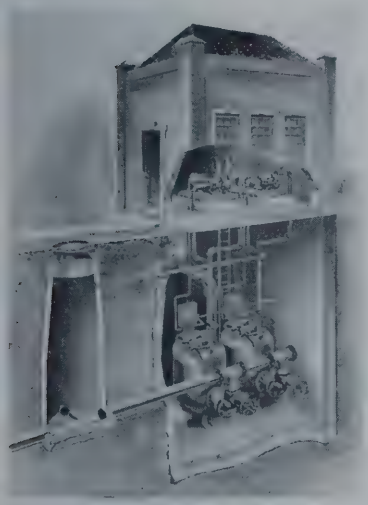
Albert Grauer & Co., 1408 Seventeenth Street, Detroit, Mich.
Grauer-Watkins Red Asphalt Flooring. Folder, 4 pp., 8½ x 11 in. Data on a valuable form of flooring.

Norton Company, Worcester, Mass.
Filing Folder. 8½ x 11¾ in. 27 pp. Illustrated with drawings. Specification data for architects.

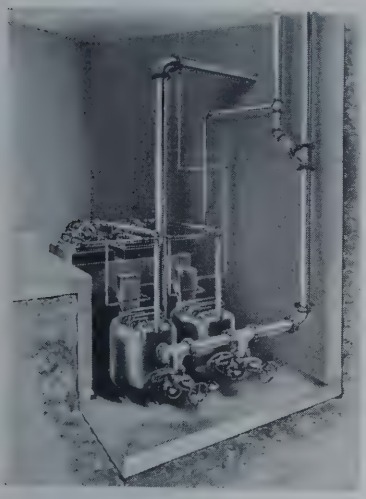
Ritter Lumber Co., W. M., Columbus, Ohio.
Ritter Oak Flooring, brochure 5 x 7 in. 31 pp. Illustrated. Excellent data on floors of different kinds and of various woods.
Beauty Begins in the Forest.
Large illustrated folder on modern flooring.

U. S. Gypsum Co., Chicago.
Pyrobar Floor Tile. Folder. 8½ x 11 in. Illustrated. Data on building floors of hollow tile, and tables on floor loading.

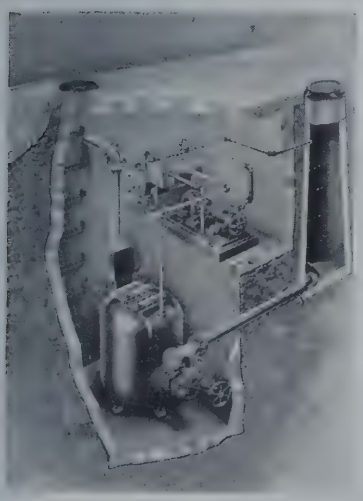
No intricate air valves in these sewage plants



A duplex installation. Widely used in municipal work for pumping sewage from low areas into gravity sewer.



Installation for office building, apartment house, hotel or hospital. Discharge is into street sewer.



Underground installation for municipal work.

Throughout the Jennings Sewage Ejector you will notice a simplicity and sturdiness in construction that make possible two outstanding advantages in pneumatic equipment of this kind — trustworthy performance, at the least cost.

Intricate air valves and similar complicated mechanisms have been avoided. There are no inaccessible parts. Nor any devices likely to get out of order and require attention.

Let us send you further details before you lay out your next sewage ejector plant.

NASH ENGINEERING COMPANY

12 WILSON ROAD SO. NORWALK, CONN.

Branch Sales Offices: Atlanta, Birmingham, Boston, Buffalo, Chattanooga, Chicago, Cleveland, Dallas, Denver, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Memphis, Miami, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Richmond, St. Louis, Salt Lake City, San Francisco, Seattle, Washington, D. C. **In Canada:** Montreal, Toronto, and Vancouver. **European Offices:** London, Eng., Norman Eng. Co.; Brussels, Belgium and Amsterdam, Holland, Louis Reijners & Co.; Oslo, Norway, and Stockholm, Sweden, Lorentzen & Wettre.

Jennings Pumps

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 146*

FLOORING—Continued

United States Quarry Tile Co., Parkersburg, W. Va.
Quarry Tiles for Floors. Booklet, 119 pp., 8½ x 11 ins. Illustrated. General catalog. Details of patterns and trim for floors.
Art Portfolio of Floor Designs. 9¼ x 12¼ ins. Illustrated in colors. Patterns of quarry tiles for floors.

U. S. Rubber Co., 1790 Broadway, New York.
Period Adaptations for Modern Floors. Brochure. 8 x 11 in. 60 pp. Richly illustrated. A valuable work on the use of rubber tile for flooring in interiors of different historic styles.

Zenitherm Co., Inc., 390 Frelinghuysen Avenue, Newark, N. J.
Zenitherm Floors. Booklet, 14 pp., 8½ x 11 ins. Illustrated. Floors for interior and semi-interior use.
Contractors Handbook. Brochure, 10 pp., 4½ x 6 ins. Complete data for using Zenitherm.

FURNITURE

American Seating Co., 14 E. Jackson Blvd., Chicago, Ill.
Ars Ecclesiastica Booklet. 6 x 9 in. 48 pp. Illustrations of church fitments in carved wood.
Theater Chairs. Booklet. 6 x 9 in. 48 pp. Illustrations of theater chairs.

Concealed Bed Corporation, 58 East Washington St., Chicago.
Eight-Room Convenience at Six-Room Price. Booklet, 16 pp. 3¼ x 5 in. Illustrated. Data on concealed beds for home owners.
Save Floor Space. Brochure, 36 pp. 4 x 8¾ in. Illustrated. Describes Holmes beds, giving measurement data.

Kensington Mfg. Company, Showrooms, 41 West 45th St., New York.
Illustrated booklet indicative of the scope, character and decorative quality of Kensington Furniture, with plan of co-operation with architects, sent on request.
Photographs and full description of hand-made furniture in all the period styles, furnished in response to a specific inquiry.

McKinney Mfg. Co., Pittsburgh.
Forethought Furniture Plans. Sheets, 6¼ x 9 ins., drawn to ¼-inch scale. An ingenious device for determining furniture arrangement.

White Door Bed Company, The, 130 North Wells Street, Chicago, Ill.
Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes and illustrates the use of "White" Door Bed and other space-saving devices.

GARAGES

Ramp Buildings Corporation, 21 East 40th Street, New York.
Building Garages for Profitable Operation. Booklet. 8½ x 11 in. 16 pp. Illustrated. Discusses the need for modern mid-city parking garages, and describes the d'Humy Motoramp system of design, on the basis of its superior space economy and features of operating convenience. Gives cost analyses of garages of different sizes, and calculates probable earnings.
Garage Design Data. Series of informal bulletins issued in loose-leaf form, with monthly supplements.

GLASS CONSTRUCTION

Adamston Flat Glass Co., Clarksburg, W. Va.
Quality and Dependability. Folder, 2 pp., 8½ x 11 ins. Illustrated. Data in the company's product.

Libbey-Owens Sheet Glass Co., Toledo, O.
Flat Glass. Brochure, 11 pp., 5⅛ x 7⅝ ins. Illustrated. History of manufacture of flat, clear, sheet glass.

Mississippi Wire Glass, 220 Fifth Avenue, New York.
Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

GRILLES

Metalace Corporation, South Boston, Mass.
Metalace, Catalog D. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Data on a valuable type of material for grilles, bank screens, radiator enclosures, etc.

Wickwire Spencer Steel Co., Inc., 41 East 42nd St., New York.
Clinton Grilles. Booklet. 9 x 11 in. 12 pp. A brochure on metal grilles, particularly for use over heating radiators.

HARDWARE

P. & F. Corbin, New Britain, Conn.
Early English and Colonial Hardware. Brochure, 8½ x 11 in. An important illustrated work on this type of hardware.
Locks and Builders' Hardware. Bound Volume, 486 pp., 8½ x 11 ins. An exhaustive, splendidly prepared volume.

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

McKinney Mfg. Co., Pittsburgh.
Forged Iron by McKinney. Booklet, 6 x 9 ins. Illustrated. Deals with an excellent line of builders' hardware.
Forged Lanterns by McKinney. Brochure, 6 x 9 ins. Illustrated. Describes a fine assortment of lanterns for various uses.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Distinctive Garage Door Hardware. Booklet. 8½ x 11 in. 65 pp. Illustrated. Complete information accompanied by data and illustrations on different kinds of garage door hardware.

Sargent & Company, New Haven, Conn.
Details to Which Standard Hardware Can Be Applied. Booklet. 6 pp. 9 x 12 in. Illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.
Sargent Locks and Hardware. Bound volume, 534 pp., 9 x 12 in., illustrated. Complete catalog of Sargent line of hardware.

HEATING EQUIPMENT

American Blower Co., 6004 Russell Street, Detroit.
Heating and Ventilating Utilities. A binder containing a large number of valuable publications, each 8½ x 11 in., on these important subjects.

American Radiator Company, The, 40 West 40th St., N. Y. C.
Ideal Type "A" Heat Machine. Catalog 7¾ x 10⅝ in. 32 pp. Illustrated in 4 colors. A brochure of high-efficiency heating apparatus for residences and commercial buildings.

HEATING EQUIPMENT—Continued

Ideal Water Tube Boilers. Catalog 7¾ x 10⅝. 32 pp. Illustrated in 4 colors. Data on a complete line of Heating Boilers of the Water Tube type.
Ideal Smokeless Boilers. Catalog 7¾ x 10½ in. 32 pp. Illustrated in 4 colors. Fully explains a boiler free from the objection of causing smoke.
Ideal Boilers for Oil Burning. Catalog 5½ x 8½ in. 36 pp. Illustrated in 4 colors. Describing a line of Heating Boilers especially adapted to use with Oil Burners.
Corto—The Radiator Classic. Brochure 5½ x 8½ in. 16 pp. Illustrated. A brochure on a space-saving radiator of beauty and high efficiency.
Ideal Arcola Radiator Warmth. Brochure 6¼ x 9¼. Illustrated. Describes a central all-on-one-floor heating plant with radiators for small residences, stores, and offices.

James B. Clow & Sons, 534 S. Franklin St., Chicago.
Clow Gasteam Vented Heating System. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Deals with a valuable form of heating equipment for using gas.

C. A. Dunham Company, 450 East Ohio Street, Chicago, Ill.
Dunham Radiator Trap. Bulletin 101. 8 x 11 in. 12 pp. Illustrated. Explains working of this detail of heating apparatus.
Dunham Packless Radiator Valves. Bulletin 104. 8 x 11 in. 8 pp. Illustrated. A valuable brochure on valves.
Dunham Return Heating System. Bulletin 109. 8 x 11 in. Illustrated. Covers the use of heating apparatus of this kind.
Dunham Vacuum Heating System. Bulletin 110. 8 x 11 in. 12 pp. Illustrated.
The Dunham Differential Vacuum Heating System. Bulletin 114. Brochure, 8 pp., 8 x 11 ins. Illustrated. Deals with heating for small buildings.
The Dunham Differential Vacuum Heating System. Bulletin 115. Brochure, 12 pp., 8 x 11 ins. Illustrated. Deals with heating for large buildings.

Excelso Products Corporation, 119 Clinton St., Buffalo, N. Y.
Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

The Fulton Sylphon Company, Knoxville, Tenn.
Sylphon Temperature Regulators. Illustrated brochures, 8½ x 11 ins., dealing with general architectural and industrial applications; also specifically with applications of special instruments.
Sylphon Heating Specialties. Catalog No. 200, 192 pp., 3½ x 6¾ ins. Important data on heating.

Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.
Vapor Heat Bulletin 21. 8½ x 11 in. 32 pp. Illustrated. Contains new and original data on Vapor Heating. Rules for computing radiation, pipe sizes, radiator tappings. Steam table showing temperature of steam and vapor at various pressures, also description of Illinois Vapor Specialties.

S. T. Johnson Co., Oakland, Calif.
Bulletin No. 4A. Brochure, 8 pp., 8½ x 11 in. Illustrated. Data on different kinds of oil-burning apparatus.
Bulletin No. 31. Brochure, 8 pp., 8½ x 11 in. Illustrated. Deals with Johnson Rotary Burner With Full Automatic Control.

Kewanee Boiler Co., Kewanee, Ill.
Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.
Catalog No. 78, 6 x 9 in. Illustrated. Describes Kewanee Firebox Boilers with specifications and setting plans.
Catalog No. 79. 6 x 9 in. Illustrated. Describes Kewanee power boilers and smokeless tubular boilers with specifications.

May Oil Burner Corp., Baltimore.
Adventures in Comfort. Booklet, 24 pp., 6 x 9 ins. Illustrated. Non-technical data on oil as fuel.
Taking the Quest out of the Question. Brochure, 16 pp., 6 x 9 ins. Illustrated. For home owners interested in oil as fuel.

Milwaukee Valve Co., Milwaukee.
MILVACO Vacuum & Vapor Heating System. Nine 4-p. bulletins, 8½ x 11 ins. Illustrated. Important data on heating.
MILVACO Vacuum & Vapor Heating Specialties. Nine 4-p. bulletins, 8½ x 11 ins. Illustrated. Deal with a valuable line of specialties used in heating.

Nash Engineering Company, South Norwalk, Conn.
No. 37. Devoted to Jennings Hytor Return Line Vacuum Heating Pumps, electrically driven, and supplied in standard sizes up to 300,000 square feet equivalent direct radiation.
No. 16. Dealing with Jennings Hytor Air Line Heating Pumps.
No. 17. Describing Jennings Hytor Condensation Pumps, sizes up to 70,000 square feet equivalent direct radiation.
No. 25. Illustrating Jennings Return Line Vacuum Heating Pumps. Size M, for equivalent direct radiation up to 5,000 square feet.

National Radiator Company, Johnstown, Pa.
Aero Radiators; Beauty and Worth. Catalog 34. Booklet 6 x 9 in., 20 pp., describing and illustrating radiators and accessories.

The Thatcher Company, 39 St. Francis Street, Newark, N. J.
Helpful Hints on Choosing Your Heater. Booklet, 20 pp., 3½ x 6¼ ins. Illustrated. Valuable data on types of heating.
Economical Warmth. Brochure, 8 pp., 3½ x 6¼ ins. Illustrated. Deals with economical heating.

Rome Brass Radiator Corp., 1 East 42nd Street, New York.
Steam Heat by Wire. Folder, 8 pp., 4 x 6 ins. Illustrated. Data on an improved electric heater.
Robras Electric Steam Radiator. Folder, 4 pp., 8½ x 11 ins. Illustrated. A means of obtaining supplementary or emergency heating.

Trane Co., The, La Crosse, Wis.
Bulletin 14. 16 pp. 8½ x 10⅝ in. Cover the complete line of Trane Heating Specialties, including Trane Bellows Traps, and Trane Bellows Packless Valves.
Bulletin 20. 24 pp. 8½ x 10⅝ in. Explains in detail the operation and construction of Trane Condensation. Vacuum, Booster, Circulating, and similar pumps

Sylphon TRADE MARK

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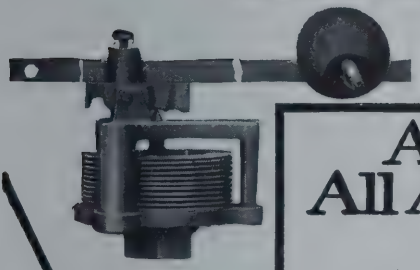

No. 22
For Steam Boilers

Your Guarantee
THE SYLPHON BELLOWS

The diaphragm of all Sylphon Damper Regulators—recognized by engineers and scientists as the most durable, sensitive expansion unit known.

Standard Equipment on

Abendroth
Ames
Birchfield
B-Line
Burnham
Coil
Coatesville
Congress
Fitzgibbons-Ontario
Floral City
Freed
Galva
Geneva Foundry Co.
Hart & Crouse
Heggie-Simplex
Imperial
International Economy
Keysco
Keystone
Kewanee
L-O
Lansdale
Molby
National
Novelty
Oil City
Orr & Sembower
Otis-Sawyer-Economy
Peerless Heater Co.
Pierce-Pebco
Putnam
Richardson & Boynton
Richmond
Ross
Senate
Spencer
Standard
Star
Thatcher
Utica
West Coast

A Standard All Along the Line

Sylphon Damper Regulators have been selected as standard equipment by the majority of leading boiler manufacturers, because of the absolute dependability and durability furnished by their exclusively patented diaphragm—the Sylphon Bellows—which guarantees the smooth, continuous operation of dampers, sensitive to the slightest change of temperature.

Your selection of any of these boilers equipped with Sylphon automatic control gives to the user a guarantee of life-long, automatic damper control with resultant economies, whether the system be hot water or steam. Sylphon Damper Regulators also can be quickly and easily installed on old heating systems with the same degree of heating satisfaction and economy of coal consumption.

Ask for Bulletin FDR—8

The Fulton Sylphon Company

Originators and Patentees of the Sylphon Bellows
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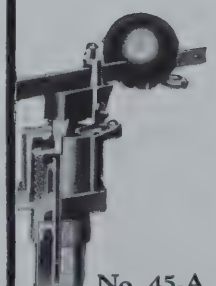
Sales Offices in: New York, Chicago, Detroit, Boston, Philadelphia and all principal cities in U. S. European Representatives: Crosby Valve & Engineering Co., Ltd., 41-42 Foley St., London, W.I., England. Canadian Representatives: Darling Brothers, Ltd., 120 Prince St., Montreal, Quebec



No. 45-A
For Hot Water Boilers

No. 22-J
For Steam Boilers

No. 46
For Domestic Hot Water Supply Boilers

For Coal-Fired, Gas or Oil-burning Systems

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 148*

HEATING EQUIPMENT—Continued

Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
Oil Heating at Its Best. Brochure, 24 pp., 5 x 8 inches. Illustrated. Non-technical description of the advantages of using oil for heating.

Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
Oil Heating and What It Means to the Architect. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Use of oil from an architect's point of view.

HOSPITAL EQUIPMENT

The Frink Co., Inc., 24th St. and Tenth Ave., New York City.
Catalog 426. 7 x 10 in., 16 pp. A booklet illustrated with photographs and drawings, showing the types of light for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses.

The International Nickel Company, 67 Wall St., New York, N. Y.
Hospital Applications of Monel Metal. Booklet. 8½ x 11½ in. 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.

The Kny-Scheerer Corporation of America, 119 Seventh Ave., New York.
Hospital Equipment, 16th Edition. 7¼ x 10½ in. 232 pp. Illustrated. Complete description of Hospital and Surgical Furniture, Hospital Appliances including Operating Tables, Cabinets, Sterilizers for Water, Dressing and Instruments, also Hydrotherapeutic Apparatus.
Surgical Sundries. Second Edition. Booklet. 7⅜ x 10½ in. 48 pp. Illustrated. A complete line of glassware, enamelware, rubber goods, restraint apparatus, instrument sterilizers, sputum cups, wheel chairs and sick room comforts.
Electro Medical. 25th Edition. Booklet. 7¼ x 10½ in. 160 pp. Illustrated. A complete line of Albee Bone Sets. Apparatus for AC and DC Cystocopes, Heat Magnets, Vibrators, Compressors, Electric Light Baths, High Frequency Apparatus and X-Ray Apparatus and Accessories.

The Pick-Barth Companies, Chicago and New York.
Some Thoughts About Hospital Food Service Equipment Booklet, 21 pp., 7½ x 9¼ ins. Valuable data on an important subject.

Wilmot Castle Company, Rochester, N. Y.
Sterilizer Equipment for Hospitals. Book, 76 pp. 8½ x 11 in. Illustrated. Gives important and complete data on sterilization of utensils and water, information on dressings, etc.
Sterilizer Specifications. Brochure, 12 pp. 8½ x 11 in. Practical specifications for use of architects and contractors.
Architects' Data Sheets. Booklet, 16 pp. 8½ x 11 in. Illustrated. Information on piping, venting, valving and wiring for hospital sterilizer installations.
Hospital Sterilizing Technique. Five booklets, 8 to 16 pp. 6 x 9 in. Illustrated. Deals specifically with sterilizing instruments, dressings, utensils, water, and rubber gloves.

HOTEL EQUIPMENT

Pick & Company, Albert, 208 West Randolph Street, Chicago, Ill.
Some Thoughts on Furnishing a Hotel. Booklet, 7½ x 9 ins. Data on complete outfitting of hotels.

INSULATING LUMBER

Mason Fibre Co., 111 West Washington St., Chicago, Ill.
Booklet, 12 pp., 8½ x 11 in. Illustrated. Gives complete specifications for use of insulating lumber and details of construction involving its use.

INSULATION

Armstrong Cork & Insulation Co., Pittsburgh, Pa.
The Insulation of Roofs with Armstrong's Corkboard. Booklet. Illustrated. 7½ x 10½ in. 32 pp. Discusses means of insulating roofs of manufacturing or commercial structures.
Insulation of Roofs to Prevent Condensation. Illustrated booklet. 7½ x 10½ in. 36 pp. Gives full data on valuable line of roof insulation.
Filing Folder for Pipe Covering Data. Made in accordance with A. I. A. rules.
"The Cork Lined House Makes a Comfortable Home." 5 x 7 in. 32 pp. Illustrated.
Armstrong's Corkboard Insulation for Walls and Roofs of Buildings. Booklet, 66 pp., 9½ x 11¾ ins. Illustrates and describes use of insulation for structural purposes.

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Insulating Quilt. Booklet, 7½ x 10½ ins., 24 pp., Illustrated. Deals with a valuable type of insulation.

Celite Products Co., 1320 South Hope St., Los Angeles.
The Insulation of Boilers. Booklet. 8 pp., 8½ x 11 ins. Illustrated. On insulating boiler walls, breechings, and stacks to reduce amount of radiation.
Heat Insulation Specifications and Blue Prints. Booklet, 20 pp., 8½ x 11 ins. Illustrated. On approved types of insulation.

Flax-li-num Insulating Company, St. Paul, Minn.
"Heat Insulation for Houses." Booklet, 64 pp., 9¾ x 11¼ ins. Illustrated. Authoritative information on thermal insulation with complete specifications for all types of buildings.

Philip Carey Co., The, Cincinnati, Ohio.
Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Celotex Company, The, 645 N. Michigan Ave., Chicago, Ill.
The Hidden Comfort of Costly Homes. Booklet 8½ x 11 in.
Celotex Specifications. Booklet 8½ x 11 in.

Johns-Manville Corp., Madison Ave. & 41st St., New York, N. Y.
Johns-Manville Service to Industry. Catalog. 8½ x 11 ins. 300 pp. Illustrated. Contains valuable data on all forms of insulation, packings, steam traps, high temperature cements, brake blocks, linings, flooring, roofing, asbestos specialties, waterproofing and dampproofing, also general technical data.
A Representation Installation of the Johns-Manville Underground System of Insulation. Booklet 20 pp., 8½ x 11 ins.

JOISTS

Bates Expanded Steel Truss Co., East Chicago, Ind.
Catalog No. 4. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Gives details of truss construction with loading tables and specifications.

Truscon Steel Co., Youngstown, Ohio
Truscon Steel Joists. Booklet, 8½ x 11 in., 16 pp. Illustrated with typical buildings and showing details of construction. Tables of sizes and safe loads.
Truscon Steel Joist Buildings. Illustrated 32-page brochure, attractively illustrated, showing types of buildings equipped with Truscon Steel Joist.
Strip Steel Joist Construction. 14-page booklet, with illustrations. Reprint of paper presented to Building Officials' Conference, Madison, Wis., 1925, by J. J. Calvin, Secretary, Strip Steel Joist Association.

KITCHEN EQUIPMENT

The International Nickel Company, 67 Wall St., New York, N. Y.
Hotels, Restaurants and Cafeteria Applications of Monel Metal. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of equipment.

McDougall Company, Frankfort, Ind.
Kitchens for Homes and Apartments. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Views and plans of conveniently equipped kitchens.
File Folder. Service sheets and specifications useful in preparing kitchen layouts.
Domestic Science Kitchen Units. Brochure, 8pp., 8½ x 11 ins. Illustrated. Deals with flexible line of kitchen equipment.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.
School Cafeteria. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue prints. Very valuable to the architect.
School Cafeterias. Booklet. 9 x 6 in. Illustrated. The design and equipment of school cafeterias with photographs of installation and plans for standardized outfits.

LABORATORY EQUIPMENT

Alberene Stone Co., 153 West 23rd Street, New York City
Booklet 8¾ x 11¼ in., 26 pp. Stone for laboratory equipment, shower partitions, stair treads, etc.

Duriron Company, Dayton, Ohio.
Duriron Acid, Alkali and Rust-proof Drain Pipe and Fittings. Booklet, 8½ x 11 ins., 20 pp. Full details regarding a valuable form of piping.

LANTERNS

Todhunter, Arthur, 119 E. 57th St., New York.
Hand Wrought Lanterns. Booklet. 5¼ x 6¼ in 20 pp. Illustrated in Black and White. With price list. Lanterns appropriate for exterior and interior use, designed from old models and meeting the requirements of modern lighting.

LATH, METAL AND REINFORCING

Genfire Steel Company, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone.
Rigid Metal Lath and interior plastering.

Milwaukee Corrugating Co., Milwaukee, Wis.
The Milcor Manual. Booklet 8½ x 11 in. 64 pp. Illustrated. Covers Milcor methods and materials, metal lath, corner beads, steel domes, channels, etc.

Northwestern Expanded Metal Co., 1234 Old Colony Building, Chicago, Ill.
Northwestern Expanded Metal Products. Booklet. 8½ x 10¾ in., 20 pp. Fully illustrated, and describes different products of this company, such as Kno-burn metal lath, 20th Century Corrugated. Plasta-saver and Longspan lath channels, etc.
Longspan ¾" Rib Lath. Folder 4 pp., 8½ x 11 ins. Illustrated. Deals with a new type of V-rit expanded metal.
A. I. A. Sample Book. Bound volume, 8½ x 11 ins. Contains actual samples of several materials and complete data regarding their use.

Wickwire Spencer Steel Co., Inc., 41 East 42nd St., New York.
Clinton Wire Lath. Brochure. 9 x 11 in. 51 pp. A valuable booklet on metal lathing and the proper method of using it.

Truscon Steel Company, Youngstown, Ohio.
Truscon 1-A Metal Lath. 12-page booklet, 8½ x 11 in., beautifully printed, with illustrations of details of lath and method of application.
Truscon ¾-inch Hy-Rib for Roofs, Floors and Walls. Booklet, 8½ x 11in., illustrating Truscon ¾-in. Hy-Rib as used in industrial buildings, plates of typical construction. Progressive steps of construction. Specification and load tables.

LAUNDRY CHUTES

The Pfaudler Company, 217 Cutler Building, Rochester, N. Y.
Pfaudler Glass-Lined Steel Laundry Chutes. Booklet. 5⅛ x 7⅛ in. 16 pp. Illustrated. A beautifully printed brochure describing in detail with architects' specifications THE PFAUDLER GLASS LINED STEEL LAUNDRY CHUTES. Contains views of installations and list of representative examples.

LAUNDRY MACHINERY

American Laundry Machinery Co., Norwood Station, Cincinnati, Ohio.
Functions of the Hotel and Hospital Laundry. Brochure, 8 pp., 8½ x 11 ins. Valuable data regarding an important subject.

Less Radiation is Required when you Insulate the Roof with Cork

THE ECONOMY of insulating the roof of a new building with Armstrong's Corkboard is immediately apparent when you figure the radiation for the top floor. An adequate thickness of Armstrong's Corkboard materially reduces the heat loss through the roof, and decreases in the same proportion the radiation requirements for the top story.

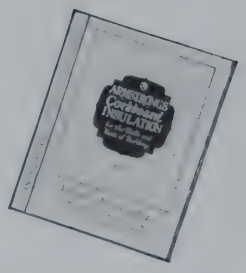
In many cases, also, a smaller heating plant can be safely used and a part of the investment in corkboard thus immediately charged off. The amount of reduction for any specific building depends, of course, on the proportion of roof exposure to wall exposure. It will be more for low buildings of extensive roof area than for tall buildings of small roof area.

In addition to the saving in the cost of the heating plant, there is a saving in the consumption of fuel which continues throughout the life of the building.

The allowance for reduction of heat losses can be definitely calculated when Armstrong's Corkboard is used. Its insulating value is a known and dependable quantity which is not subject to deterioration in service. Armstrong Engineers will gladly assist architects in making these calculations on any specific job. There is no charge for this service.

Armstrong's Corkboard Insulation

for the Roofs of All Kinds of Buildings



Filing Catalog for Architects

Complete information about insulation with Armstrong's Corkboard has been published in this handy reference book for architect, draftsman, engineer or specification writer. Sent free on request. Armstrong Cork & Insulation Company, 132 Twenty-fourth Street, Pittsburg, Pa.

Insulating the roof of Nurses' Home, St. Mary's Hospstal, Kansas City, Mo., with Armstrong's Corkboard. 2 inches thick. Wilkinson and Crans, Architects.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 150*

LIBRARY EQUIPMENT

Art Metal Construction Co., Jamestown, N. Y.
Planning the Library for Protection and Service. Brochure, 52 pp., 8½ x 11 in. Illustrated. Deals with library fillings of different kinds.
Library Bureau Division, Remington Rand, N. Tonawanda, N. Y. Like stepping into a Story Book. Booklet, 24 pp., 9 x 12 ins. Deals with equipment of Los Angeles Public Library.

Snead & Company, Jersey City, N. J.
Library Planning, Bookstacks and Shelving. Bound Volume, 271 pp., 9 x 12 ins. Illustrated. A Valuable work "for distribution among architects, librarians and trustees."

LIGHTING EQUIPMENT

The Frink Co., Inc., 24th St. and 10th Ave., New York City.
Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross-sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

Gleason-Tiebout Glass Co. (Celestialite Division), 200 Fifth Avenue, New York.
Next to Daylight Brochure, 19 pp., 4 x 8½ ins. Illustrated. Deals with a valuable type of lighting fixture.
Celestialite Circular No. 40. Folder, 4 pp., 3½ x 6 ins. "What Nature does to the Sun, Celestialite does to the Mazda lamp."
Attractive Units in Celestialite. Folder, 12 pp., 3¼ x 6½ ins. Illustrates Decorated Celestialite Units.
It Has Been Imitated. Folder, 4 pp., 10 x 13 ins. Data in an important detail of lighting equipment.

Guth Company, The Edwin F., 2615 Washington Ave., St. Louis, Mo.
Guth Lighting Equipment (Catalog No. 15). Booklet, 8½ x 11 ins. Fully illustrated, and covering lighting fixtures for buildings of all kinds.
Forge Craft (Catalog No. 16). Booklet, 16 pp., 8½ x 10¾ ins. Brochure dealing specifically with fixtures intended for use in buildings of the so-called "bungalow" type.
Aglite Porcelain Enameled Illuminators. Folder, 4 pp., 8½ x 11 in. on a new and improved type of lighting.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arthur Todhunter, 119 E. 57th St., New York, N. Y.
Georgian Mantels. New Booklet. 24 pp. 5¼ x 6¼ in. A fully illustrated brochure on eighteenth century mantels. Folders give prices of mantels and illustrations and prices of fireplace equipment.

MARBLE

The Georgia Marble Company, Tate, Ga. New York Office, 1328 Broadway.
Why Georgia Marble is Better. Booklet. 3⅛ x 6 in. Gives analysis, physical qualities, comparison of absorption with granite, opinions of authorities, etc.
Convincing Proof. 3⅛ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

METALS

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.
Apollo and Apollo-Keystone Galvanized Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.
Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.

The International Nickel Company, 67 Wall St., New York, N. Y.
The Choice of a Metal. Booklet. 6¼ x 3 in. 166 pp. Illustrated. Monel Metal—its qualities, use and commercial forms, briefly described.

MILL WORK—See also Wood

Curtis Companies Service Bureau, Clinton, Iowa.
Architectural Interior and Exterior Woodwork. Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.
Better Built Homes. Vols. XV-XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.
Curtis Details. Booklet. 19½ x 23½ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.

Hartmann-Sanders Company, 2155 Elston Ave., Chicago, Ill.
Column Catalog. 7½ x 10 in. 48 pp. Illustrated. Contains prices on columns 6 to 36 in. diameter, various designs and illustrations of columns and installations.
The Pergola Catalog. 7½ x 10 in. 64 pp. Illustrated. Contains illustrations of pergola lattices, garden furniture in wood and cement, garden accessories.

Roddis Lumber and Veneer Co., Marshfield, Wis.
Roddis Doors. Brochure, 24 pp., 5¼ x 8½ in. Illustrated price list of doors for various types of buildings.
Roddis Doors, Catalog G. Booklet, 183 pp., 8½ x 11 in. Completely covers the subject of doors for interior use.
Roddis Doors for Hospitals. Brochure, 15 pp., 8½ x 11 in. Illustrated work on hospital doors.
Roddis Doors for Hotels. Brochure, 15 pp., 8½ x 11 in. Illustrated work on doors for hotel and apartment buildings.

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.
Clinton Mortar Colors. Folder. 8½ x 11 in. 4 pp. Illustrated in color, gives full information concerning Clinton Mortar Colors with specific instructions for using them.
Color Card. 6½ x 3½ in. Illustrates in color the ten shades in which Clinton Mortar Colors are manufactured.
Something new in Stucco. Folder. 3½ x 6 ins. An interesting folder on the use of coloring matter for stucco-coated walls.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Glidden Company, Cleveland, Ohio.
More Daylight. 8 x 10½ in. 20 pp. Portraying by illustrations and text the need and methods of modern mill painting.
Glidden Specification Book. 8 x 10¼ in. 12 pp. Complete architectural specifications for Glidden Paints and Varnishes, including Ripolin. Directions for the proper finishing of wood,

A. C. Horn Company, Long Island City, N. Y.
Keramic Catalog. Booklet 26 pp., 8½ x 11 in. A magnificent brochure illustrated in color, describing a valuable line of specialties for use with concrete floors—colorings, hardeners, waterproofing, etc.

National Lead Company, 111 Broadway, New York, N. Y.
Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulæ for painting various surfaces of wood, plaster, metals, etc., both interior and exterior.
Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulæ for painting metals.
Came Lead. Booklet. 8¾ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.
Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

Pratt & Lambert, Inc., Buffalo, N. Y.
Specification Manual for Paint, Varnishing and Enameling. Booklet, 38 pp., 7½ x 10⅝ ins. Complete specifications for painting, varnishing and enameling interior and exterior wood, plaster, and metal work.

The Ripolin Company, Cleveland, Ohio.
Ripolin Specifications. Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.
Why Ripolin Has an International Reputation. 8 x 10¾ in. 24 pp. Designed for the architect's files to illustrate the many varied uses of Ripolin Enamel Paint in all parts of the world. Profusely illustrated.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Preservative Coating. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Sherwin-Williams Company, 601 Canal Rd., Cleveland, Ohio.
Painting Concrete and Stucco Surfaces. Bulletin No. 1. 8½ x 11 in. 8 pp. Illustrated. A complete treatise with complete specifications on the subject of Painting of Concrete and Stucco Surfaces. Color chips of paint shown in bulletin.
Enamel Finish for Interior and Exterior Surfaces. Bulletin No. 2, 8½ x 11 in. 12 pp. Illustrated. Thorough discussion, including complete specifications for securing the most satisfactory enamel finish on interior and exterior walls and trim.
Painting and Decorating of Interior Walls. Bulletin No. 3. 8½ x 11 in. 20 pp. Illustrated. An excellent reference book on Flat Wall Finish, including texture effects, which are taking the country by storm. Every architect should have one on file.
Protective Paints for Metal Surfaces. Bulletin No. 4. 8½ x 11 in. 12 pp. Illustrated. A highly technical subject treated in a simple, understandable manner.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.
Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

U. S. Gutta Percha Paint Co., Providence, R. I.
Barreled Sunlight. Booklet, 8½ x 11 in. Data on "Barreled Sunlight" with specifications for its use.

Valentine & Co., 456 Fourth Avenue, New York.
How to Use Valspar. Illustrated booklet, 32 pp., 3¾ x 8 ins. Deals with domestic uses for Valspar.
How to Keep Your House Young. Illustrated brochure, 23 pp., 7 x 8½ in. A useful work on the upkeep of residences.

Zapon Co., The, 247 Park Ave., New York City.
Zapon Architectural Specifications. Booklet, 28 pp., 8½ x 11 in. Describes odorless brushing and spraying lacquers and lacquer enamels.

PAPER

A. P. W. Paper Co., Albany, N. Y.
"Here's a Towel Built for Its Job." Folder, 8 pp., 4 x 9 ins. Deals with "Onliwon" paper towels.

PARTITIONS

Circle A Products Corporations, New Castle, Ind.
Circle A Partitions Sectional and Movable. Brochure. Illustrated. 8½ x 11¼ in. 32 pp. Full data regarding an important line of partitions, along with Erection Instructions for partitions of three different types.

Hauserman Company, E. F., Cleveland, Ohio.
Hollow Steel Standard Partitions. Various folders, 8½ x 11. Illustrated. Give full data on different types of steel partitions, together with details, elevations and specifications.

Improved Office Partition Company, 25 Grand St., Elmhurst, L. I.
Telesco Partition. Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.
Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

U. S. Gypsum Co., Chicago.
Pyrobar Partition and Furring Tile. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes use and advantages of hollow tile for inner partitions.

Snead Standard Stack Type A, Library of Congress, Northeast Court, Wash., D. C.

SNEAD BOOKSTACKS

Library of Congress

THE stack (see above) in the Northeast Court, a *fourteen-tier* stack which supports its own roof, accommodates over one and one-half million volumes. The library of Congress also contains four other great stacks and several small ones—all Snead stacks. These stacks are structural units and would stand independently if the building were removed from around them.

This installation (Library of Congress) shows the use of larger shelves to accommodate large bound volumes (newspaper page size) laid flat.

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We began the manufacture of metal bookstacks when they first came into use and have equipped libraries throughout the United States and in many foreign countries. Whether your requirement be caring for a few hundred books or several million books we shall be glad to submit a plan indicating which type of standard stack is most suitable and most economical.

To Architects, Librarians, and owners who must provide for book storage in any building, we shall be glad to send our book "LIBRARY PLANNING, BOOKSTACKS AND SHELVING." (Cloth bound, 9½ x 12, 272 pages, illustrated.)

SNEAD & COMPANY

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We also manufacture SNEAD STEEL PARTITIONS in both "office" and "industrial" types, and maintain a Partition Sales Office at 101 Park Ave., N. Y.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 152*

PIPE

American Brass Company, Waterbury, Conn.
Bulletin B-1. Brass Pipe for Water Service. 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I.P.S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

American Rolling Mill Company, Middletown, Ohio.
How ARMCO Dredging Products Cut Costs. Booklet, 16 pp., 6 x 9 in. Data on dredge pipe.

Cement Lined Pipe Company, Lynn, Mass.
Cement Lined Pipe for Corrosive Waters. Booklet, 20 pp., 6 x 9 in. Illustrated. Data on cement lining to prevent corrosion in pipe.

Clow & Sons, James B., 534 S. Franklin St., Chicago, Ill.
Catalog "A". 4 x 6½ in. 700 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

Cohoes Rolling Mill Company, Cohoes, N. Y.
Cohoes Pipe Handbook. Booklet, 40 pp., 5 x 7½ in. Data on wrought iron pipe.

Duriron Company, Inc., Dayton, Ohio.
Duriron Acid, Alkali, Rust-proof Drain Pipe and Fillings. Booklet, 20 pp., 8½ x 11 in., illustrated. Important data on a valuable line of pipe.

National Tube Co., Frick Building, Pittsburgh, Pa.
"National" Bulletin No. 2. Corrosion of Hot Water Pipe, (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.
"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion, and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.
"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable, engineering data of value to architects, engineers, etc.
Modern Welded Pipe. Book of 88 pp. (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

PLUMBING EQUIPMENT

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.
Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.
Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.
Planning the Small Bathroom. Booklet. 5 x 8 in. Discusses planning bathrooms of small dimensions.

Duriron Company, Dayton, Ohio.
Duriron Acid, Alkali and Rust-proof Drain Pipe and Fittings. Booklet, 8½ x 11 ins., 20 pp. Full details regarding a valuable form of piping.

Eljer Company, Fort City, Pa.
Complete Catalog. 3¾ x 6¾ in. 104 pp. Illustrated. Describes fully the complete Eljer line of standardized vitreous china plumbing fixtures, with diagrams, weights and measurements.
Standardized Sixteen Circular. 3¾ x 6¾ in. 18 pp. Illustrated.

Imperial Brass Mfg. Co., 1200 W. Harrison Street, Chicago. Ill.
Watrous Patent Flush Valves, Duojet Water Closets, Liquid Soap Fixtures, etc. 8½ x 11 ins., 136 pp., loose-leaf catalogue, showing roughing-in measurements, etc.

Maddock's Sons Company, Thomas, Trenton, N. J.
Catalog K. 10⅞ x 7⅞ in. 242 pp. Illustrated. Complete data on vitreous china plumbing fixtures with brief history of Sanitary Pottery.

Speakman Company, Wilmington, Del.
Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.
Toned Up in Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

PUMPS

Chicago Pump Company, 2300 Wolfram Street, Chicago, Ill.
The Correct Pump to Use. Portfolio containing handy data. Individual bulletins, 8½ x 11 in., on bilge, sewage, condensation, circulating, house, boiler feed and fire pumps.

Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.
Bulletin E. 7¾ x 10¼ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

RAMPS

Ramp Buildings Corporation, 21 East 40th Street, New York.
Building Garages for Profitable Operation. Booklet. 8½ x 11 in. 16 pp. Illustrated. Discusses the need for modern mid-city parking garages, and describes the d'Humy Motoramp system of design, on the basis of its superior space economy and features of operating convenience. Gives cost analyses of garages of different sizes, and calculates probable earnings.
Garage Design Data. Series of informal bulletins issued in loose-leaf form, with monthly supplements.

The Trane Co., LaCrosse, Wis.
Trane Small Centrifugal Pumps. Booklet. 3¾ x 8 in., 16 pp. Complete data on an important type of pump.

REFRIGERATION

The Fulton Sylphon Company, Knoxville, Tenn.
Temperature Control of Refrigeration Systems. Booklet, 8 pp., 8½ x 11 ins. Illustrated. Deals with cold storage, chilling of water, etc.

REINFORCED CONCRETE—See also Construction, Concrete

Genfire Steel Company, Youngstown, Ohio.
Self-Sentering Handbook. 8½ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Truscon Steel Company, Youngstown, Ohio.
Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp.

North Western Expanded Metal Company, Chicago, Ill.
Designing Data. Book. 6 x 9 in. 96 pp. Illustrated. Covers the use of Econo Expanded Metal for various types of reinforced concrete construction.
Longspan ¾" Rib Lath. Folder 4 pp., 8½ x 11 ins. Illustrated. Deals with a new type of V-rit expanded metal.

ROOFING

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.
Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high-grade roofing tin plates and the advantages of the copper-steel alloy.
The Testimony of a Decade. Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustrations showing losses to various Iron and Steel Sheets for roofing, from atmosphere corrosion.

Barber Asphalt Co., Philadelphia, Pa.
Specifications, Genasco Standard Trinidad Lake Asphalt Built-up Roofing. Booklet. 8 x 10½ in. Gives specifications for use of several valuable roofing and waterproofing materials.

The Barrett Company, 40 Rector Street, New York City
Architects' and Engineers' Built-up Roofing Reference Series; Volume IV Roof Drainage System. Brochure. 63 pp. 8½ x 11¼ ins. Gives complete data and specifications for many details of roofing.

Philip Carey Co., Lockland, Cincinnati, Ohio.
Architects Specifications for Carey Built-up Roofing. Booklet. 8 x 10¾ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.
Carey Built-up Roofing for Modern School Buildings. Booklet. 8 x 10¾ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.

Federal Cement Tile Co., 608 So. Dearborn St., Chicago, Ill.
Series of Folders, 4 pp., 8½ x 11 ins. Illustrate and describe the installation of permanent concrete interlocking tile, tile with glass insets, flat tile and channel tile, on all types of industrial plants, public and other buildings with flat and pitched surfaces.
Standards. Booklet. 8½ x 11 in. 40 pp. Illustrated with full-page drawings. Gives full details of all forms of roof construction of steel structure, ridge and gutter construction, purlin arrangement, spacing, etc., for standard roofs.
The Ideal Retaining Wall. Leaflet, 4 pp., 8½ x 11 in., illustrated. Valuable data on use of Federal Cribbing Units for constructing retaining walls.
The Roof for Permanence. Booklet, 12 pp., 8½ x 11 in., illustrated. Deals with Federal Cement Tile for flat and pitched roofs for large buildings.

Heinz Roofing Tile Co., 1750 Champa St. Denver.
Plymouth-Shingle Tile with Sprocket Hips. Leaflet, 8½ x 11 ins. Illustrated. Shows use of English shingle tile with special hips.
Italian Promenade Floor Tile. Folder, 2 pp., 8½ x 11 in. Illustrated. Floor tiling adapted from that of Davanzati Palace
Mission Tile. Leaflet, 8½ x 11 ins. Illustrated. Tile such as are used in Italy and southern California.
Georgian Tile. Leaflet, 8½ x 11 ins. Illustrated. Tiling as used in old English and French farmhouses.

Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.
"Ancient" Tapered Mission Tiles. Leaflet. 8½ x 11 in. 4 pp. Illustrated. For architects who desire something out of the ordinary, this leaflet has been prepared. Describes briefly the "Ancient" Tapered Mission Tiles, hand-made, with full corners and designed to be applied with irregular exposures.

Milwaukee Corrugating Co., Milwaukee, Wis.
The Milcor Architectural Sheet Metal Guide. Booklet. 8½ x 11 in. 64 pp. Illustrated. Gives valuable technical sheet metal data.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Instructions for Laying Built-up Roofs. Booklet. 8½ x 11 in. Illustrated.
Ruberoid Facts Worth Knowing. Booklet, 20 pp., 6 x 9 ins. Illustrated. Useful data on roofing.
Ruberoid Asbestos Slates. Folder. Illustrated. Information and specifications for using asbestos slates.

U. S. Gypsum Co., Chicago.
Pyrobar Roof Construction. Booklet. 8 x 11 in. 48 pp. Illustrated. Gives valuable data on the use of tile in roof construction.
Sheetrock Pyrofill Roof Construction. Folder. 8½ x 11 in. Illustrated. Covers use of roof surfacing which is poured in place.

SASH CHAIN

Smith & Egge Mfg. Co., The, Bridgeport, Conn.
Chain Catalog. 6 x 8½ in. 24 pp. Illustrated. Covers complete line of chains.

SEWAGE DISPOSAL

Chicago Pump Co., 2336 Wolfram St., Chicago, Ill.
Flush-Kleen Dry Basin Sewage Ejector. Booklet, 16 pp., 8½ x 11 in. Illustrations and data on an important detail of equipment.

SCREENS

American Brass Co., The, Waterbury, Conn.
Facts for Architects About Screening. Illustrated folder, 9½ x 11¾ in., giving actual samples of metal screen cloth and data on fly screens and screen doors.

HOTEL ANTHONY WAYNE
Hamilton, Ohio

Architects—F. G. Mueller & W. R. Hair
Consultant Architects—Geo. B. Post & Sons
Contractors—F. K. Vaughn Building Co.

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CARNEY CEMENT
for Brick and Tile Mortar

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 154*

ROOFING—Continued

Athey Company, 6015 West 65th St., Chicago, Ill.
The Athey Perennial Window Shade. An accordion pleated window shade, made from translucent Herringbone woven Coutil cloth, which raises from the bottom and lowers from the top. It eliminates awnings, affords ventilation, can be dry-cleaned and will wear indefinitely.

The Higgin Manufacturing Co., Newport, Ky.
Your Home Screened the Higgin Way. Booklet. 8½ x 11½ in. 13 pp. Illustrated in colors. Complete description of Higgin Screens, designed to meet every need.

SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.
Specification Sheets. 7¾ x 10¼ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHELVING-STEEL

David Lupton's Sons Company, Philadelphia, Pa.
Lupton Steel Shelving. Catalog D. Illustrated brochure, 40 pp., 8⅝ x 11 in. Deals with steel cabinets, shelving, racks, doors, partitions, etc.

SKYLIGHTS

Albert Grauer & Co., 1408 Seventeenth Street, Detroit, Mich.
Grauer Wire Glass Skylights. Folder, 4 pp., 8½ x 11 in. Illustrated. Data on an important line of wire glass lights.
The Effectiveness of Sidewalk Lights. Folder, 4 pp., 8½ x 11 in. Illustrated. Sidewalk or vault lights.
Let in the Light—The Light That's Free. Folder, 4 pp., 8½ x 11 in. Illustrated. Data on securing good lighting.

SOUND DEADENER

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Deadening Quilt. Brochure 7½ x 10½ ins., 28 pp., Illustrated. Gives complete data regarding a well-known protection against sound.

STEEL PRODUCTS FOR BUILDING

Genfire Steel Company, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone.
Rigid Metal Lath and interior plastering.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
The Arc Welding of Structural Steel. Brochure, 32 pp., 8½ x 11 ins. Illustrated. Deals with an important structural process.

STONE, BUILDING

Indiana Limestone Company, Bedford, Ind.
Volume 3, Series A-3. Standard Specifications for Cut Indiana Limestone work, 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.
Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
Vol. 4. Series B. Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.
Volume 5. Series B. Indiana Limestone Library. Portfolio. 11⅛ x 8¾ in. Illustrated. Describes and illustrates the use of stone for small houses with floor plans of each.
Volume 6, Series B—Indiana Limestone School and College Buildings. 8½ x 11 in., 80 pages, illustrated.
Volume 12, Series B—Distinctive Homes of Indiana Limestone. 8½ x 11 in., 48 pages, illustrated.
Old Gothic Random Ashlar. 8½ x 11 in., 16 pages, illustrated.

STORE FRONTS

Brasco Manufacturing Co., 5025-35 South Wabash Avenue, Chicago, Ill.
Portfolio. 8½ x 11 in. 32 pp. Illustrated. Selected examples of Brasco Copper Store Fronts suitable for different businesses and varying conditions of locations.
Catalog 28. 8½ x 10¾ in. 20 pp. Illustrated with plates. Details of Brasco Copper Store front construction. Also showcases, ventilator sashes.
Detail Sheets. Set of five sheets giving details and suggestions for store front designing enclosed in envelope convenient for filing.
Brasco Copper Store Fronts; Series 202, Brasco Standard Construction. Illustrated brochure. 16 pp. 8¼ x 11 ins. Complete data on an important type of building.
Brasco Copper Store Fronts; Series 500, All-copper Construction. Illustrated brochure. 20 pp. 8½ x 11 ins. Deals with store fronts of a high class.

The Kawneer Company, Niles, Mich.
Store Front Suggestions. Booklet, 96 pp., 6 x 8½ ins. Illustrated. Shows different types of Kawneer Solid Copper Store Fronts.
Catalog K, 1927 Edition. Booklet, 32 pp., 8½ x 11 ins. Illustrated. Details of Kawneer Copper Store Fronts.
Detail Sheets for Use in Tracing. Full-sized details on sheets 17 x 22 ins.

Modern Bronze Store Front Co., Chicago Heights, Ill.
Introducing Extruded Bronze Store Front Construction. Folder, 4 pp., 8½ x 11 ins. Illustrated. Contains full sized details of metal store fronts.

Zouri Drawn Metals Company, Chicago Heights, Ill.
Zouri Safety Key-Set Store Front Construction. Catalog. 8½ x 10½ in. 60 pp. Illustrated. Complete information with detailed sheets and installation instructions convenient for architects' files.
International Store Front Construction. Catalog. 8½ x 10 in. 70 pp. Illustrated. Complete information with detailed sheets and installation instructions convenient for architects' files.

SWIMMING POOL EQUIPMENT & STERILIZATION

R. U. V. Company, Inc., 383 Madison Avenue, New York City.
Water Sterilization by Means of Ultra Violet Rays. Booklet 8½ x 11 in. 16 pp. Full data on a system of purifying water
Swimming Pool Sterilization. Booklet 8½ x 11 in. 24 pp. Describes a method purifying water in bathing pools.

SWIMMING POOL EQUIPMENT & STERILIZATION—Continued

Wallace & Tiernan Company, Newark, N. J.
The W. & T. Chlorometer, Technical Publication, No. 55. Booklet, 8½ x 11 in. 8 pp. Illustrated. A useful brochure dealing with the value of pure water and the importance of the chlorination process in sterilization.
W. & T. Chloro-Clock. Folder, 8½ x 11 ins. Illustrated. Mechanism for feeding small quantities of sterilizing solutions.
Manual Central Solution Feed Chlorinator, Type M. S. P. Folder, 8½ x 11 ins. Illustrated. Valuable for swimming pool equipment.

TERRA COTTA

National Terra Cotta Society, 19 West 44th St., New York, N. Y.
Standard Specifications for the Manufacture, Furnishing and Setting of Terra Cotta. Brochure 8½ x 11 in. 12 pp. Furnishing and Setting of Terra Cotta, consisting of complete detail Specification, Glossary of Terms Relating to Terra Cotta and Short Form Specification for incorporating in Architects' Specifications.
Color in Architecture. Revised Edition. Permanently bound volume 9⅝ x 12¾ in., containing a treatise upon the basic principles of color in architectural design, illustrating early European and modern American examples. Excellent illustrations in color.
Present Day Schools. 8½ x 11 in. 32 pp. Illustrating 42 examples of school architecture with article upon school building design by James O. Betelle, A. I. A.
Better Banks. 8½ x 11 in. 32 pp. Illustrating many banking buildings in terra cotta with an article on its use in bank design by Alfred C. Bossom, Architect.

TILE, HOLLOW

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
Standard Fireproofing Bulletin 171, 8½ x 11 ins., 32 pp. Illustrated. A treatise on the subject of hollow tile as used for floors, girder, column and beam covering and similar construction.
Natco Double Shell Load Bearing Tile Bulletin, 8½ x 11 ins., 6 pp. Illustrated.
Natco Unibacker Tile Bulletin, 8½ x 11 ins, 4 pp. Illustrated.
Natco Header Backer Tile Bulletin, 8½ x 11 ins., 4 pp. Illustrated.
NATCOFLOR Bulletin, 8½ x 11 ins., 6 pp. Illustrated.
Natco Face Tile for the Up-to-Date Farm Bulletin, 8½ x 11 ins.

TILES

United States Quarry Tile Co., Parkersburg, W. Va.
Quarry Tiles for Floors. Booklet, 119 pp., 8½ x 11 ins. Illustrated. General catalog. Details of patterns and trim for floors.
Art Portfolio of Floor Designs. 9¼ x 12¼ ins. Illustrated in colors. Patterns of quarry tiles for floors.

VALVES

Crane Co., 836 S. Michigan Ave., Chicago, Ill.
No. 51. General Catalog. Illustrated. Describes the complete line of the Crane Co.

C. A. Dunham Co., 450 East Ohio St., Chicago.
The Dunham Packless Radiator Valve Brochure, 12 pp., 8 x 11 Illustrated. Data on an important type of valve.

Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.
Catalog. 8½ x 11 in. 88 pp. Illustrated.

Jenkins Bros., 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

VENETIAN BLINDS

Burlington Venetian Blind Co., Burlington, Vt.
Venetian Blinds. Booklet, 7 in. x 10 in., 24 pages. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

VENTILATION

American Blower Co., Detroit, Mich.
American H. S. Fans. Brochure, 28 pp., 8½ x 11 in. Data on an important line of blowers.

Duriron Company, Dayton, Ohio.
Acid-proof Exhaust Fans. Folder, 8 x 10½ ins., 8 pp. Data regarding fans for ventilation of laboratory fume hoods.
Specification Form for Acid-proof Exhaust Fans. Folder, 8 x 10½ ins.

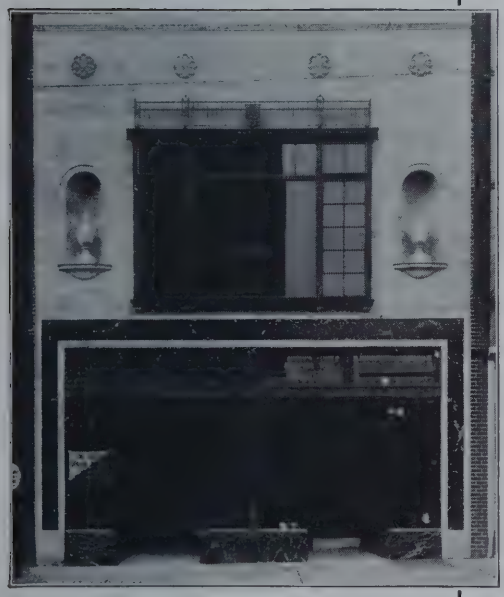
Globe Ventilator Company, 205 River Street, Troy, N. Y.
Globe Ventilators Catalog. 6 x 9 in. 32 pp. Illustrated profusely. Catalog gives complete data on "Globe" ventilators as to sizes, dimensions, gauges of material and table of capacities. It illustrates many different types of buildings on which "Globe" ventilators are in successful service, showing their adaptability to meet varying requirements.

Van Zile Ventilating Corporation, 155 East 42nd Street, New York, N. Y.
The Ventadoor Booklet. 6½ x 3½ in. 16 pp. Illustrated. Describes and illustrates the use of the Ventadoor for Hotels, Clubs, Offices, etc.

WALLS, INTERIOR

Zenitherm Co., Inc., 390 Frelinghuysen Avenue, Newark, N. J.
Zenitherm Walls. Booklet, 23 pp., 8½ x 11 ins. Illustrated. Deals with fine treatment for interior walls.
Folder of Architectural and Decorative Ornaments Achieved with Zenitherm. Stock baseboards, mouldings, etc.

E. G. Blanke, Baltimore architect, who believes that even a commonplace structure can have some distinction and charm in its exterior.



Stout's Store, Baltimore, Md., which illustrates Mr. Blanke's ideas as to exteriors and roofing. This building has a facade of marble and is covered with Carey Built-up Roofing.

NOTE TO ARCHITECTS: Send for our Architects' Specification Book.

A Marble Front for Beauty

...a Built-up Roof for Lasting Protection

"EVEN a simple, commonplace structure can be given an attractive exterior," said Mr. E. G. Blanke, Baltimore architect, "and often at very little extra cost. Take the case of a small extra store wedged in a row of other stores. Even such a building can have a front of some charm and distinction. We accomplish this by building a front of marble or other stone. This photograph illustrates how our ideas were applied in the case of Stout's Store, recently built here in Baltimore. The extra cost of a store front such as this is no way proportionate to the gain in appearance.

"In the matter of roofing for any permanent structure, costs should not count; the best always costs less in the long run. Wherever conditions permit, we use a smooth-surface, felt-and-asphalt roof. Not only is this economical in cost, but it is washed clean by every rain, and, if accidental damage should cause a leak, it is a simple matter to locate it. In addition, the life of such a roof may be doubled, or even more, by recoating with asphalt from time to time."

THE PHILIP CAREY COMPANY

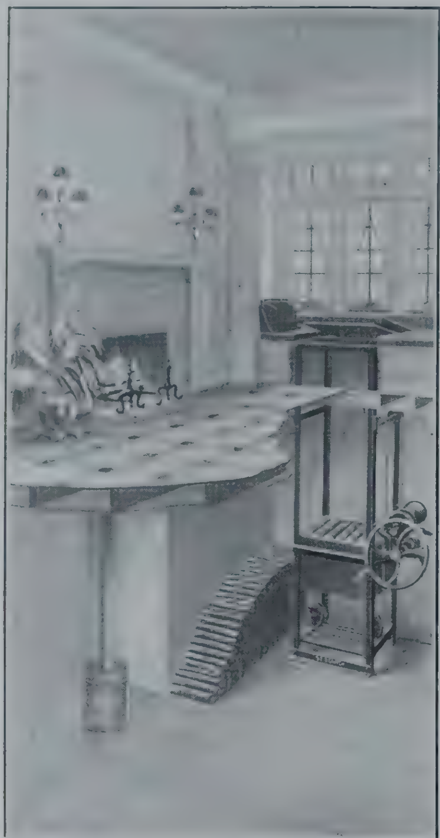
Lockland, Cincinnati, Ohio

Carey

BUILT UP ROOFS

"A ROOF FOR *EVERY* BUILDING"

For the Fireplace —



SEDGWICK FUEL LIFT

DESPITE the fact that the cheeriness of the hearth fire is one of the most attractive features of a home, most fireplaces lie cold and dead owing to the inconvenience and untidiness of carrying fuel up the stairs from the cellar and across clean floors and rugs.

This drudgery, offensive alike to master and servant, is eliminated by the Sedgwick Fuel Lift, which supplies wood or coal in usable quantities direct to the fireplace.

Write for Descriptive Pamphlet

Sedgwick Machine Works
151 West 15th Street New York

Manufacturers of "The Invalid Elevator," Dumb Waiters, Trunk Lifts, Ash Hoists, Etc.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 156*

WATERPROOFING

Carey Company, The Philip, Lockland, Cincinnati, Ohio.
Waterproofing Specification Book. 8½ x 11 in. 52 pp.

Genfire Steel Company, Youngstown, Ohio.
Waterproofing Handbook. Booklet. 8½ x 11 in. 72 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete. Free distribution.

A. C. Horn Company, Long Island City, N. Y.
Waterproofing. Folder. 9½ x 11½ in. Contains folders giving data on excellent waterproofing and dampproofing materials.

Master Builders Company, Cleveland, Ohio.
Waterproofing and Dampproofing and Allied Products. Sheets in loose index file, 9 x 12 in. Valuable data on different types of materials for protection against dampness.

Ruberoid Co., The, 95 Madison Ave., New York.
Impervite. Circular. 8½ x 11 in. 4 pp. Illustrated. An integral water-proofing compound for concrete, stucco, cement, mortar, etc.

Sommers & Co., Ltd., 342 Madison Ave., New York City.
"Permantile Liquid Waterproofing" for making concrete and cement mortar permanently impervious to water. Also circulars on floor treatments and cement colors. Complete data and specifications. Sent upon request to architects using business stationery. Circular size, 8½ x 11 in.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York, N. Y.
Pamphlet. 3¼ x 8¾ in. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

Toch Brothers, 110 East 42nd Street, New York City.
Specifications for Dampproofing, Waterproofing, Enameling and Technical Painting. Complete and authoritative directions for use of an important line of materials.

The Vortex Mfg. Co., 1978 West 77th St., Cleveland, Ohio.
Par-Lock Specification "Form D" for waterproofing surfaces to be finished with Portland cement or tile.
Par-Lock Specification "Forms E and G" membrane waterproofing of basements, tunnels, swimming pools, tanks to resist hydrostatic pressure.
Par-Lock Waterproofing. Specification Forms D, E, F and G. Sheets 8½ x 11 ins. Data on combinations of gun-applied asphalt and cotton or felt membrane, built up to suit requirements.
Par-Lock Method of Bonding Plaster to Structural Surfaces. Folder, 6 pp., 8½ x 11 ins. Official Bulletin of Approved Products,—Investigating Committees of Architects and Engineers.

WEATHER STRIPS

Athey Company, 6035 West 65th Street, Chicago.
The Only Weatherstrip with a Cloth to Metal Contact. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Data on an important type of weather stripping.

Chamberlin Metal Weather Strip Company, 1644 Lafayette Boulevard, Detroit, Mich.
Chamberlin Metal Weather Strip Details, 1925 edition. Catalog 8½ x 11 in. 48 pp. Complete specifications and full-sized details. With or without 9 x 11¾ in. folder conforming to A. I. A. filing system. May also be used in loose leaf form.
Excluding Cold and Dust with Chamberlin for 32 years. Booklet 5⅛ x 7⅛ in. 16 pp. Illustrated. Completely and interestingly illustrates application of Chamberlin equipment.
Chamberlin Details for Wood Sash and Doors. 50 pp., 8½ x 11 ins. Data and diagrams relating to weather-tight doors and windows.
Details and Specifications for Calking with Chamberlin Plaster-Calk. Folder, 4 pp., 8½ x 11 ins.
How Rain, Dust and Cold Are Kept Out. Folder, 10 pp., 5¼ x 7¼ ins. Weatherstripping for Residences.

The Higgin Manufacturing Co., Newport, Ky.
Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 21 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOWS

Detroit Steel Products Co., Detroit, Mich.
Blue Book of Steel Windows. Booklet, 128 pp., 8½ x 11 ins. Illustrated. Data on solid rolled steel windows for residental and industrial buildings.

The Kawneer Company, Niles, Mich.
Kawneer Solid Nickel Silver Windows. In casement and weight-hung types and in drop-down transom type. Portfolio, 12 pp., 9 x 11½ ins. Illustrated, and with demonstrator.

David Lupton's Sons Company, Philadelphia, Pa.
Lupton Pivoted Sash, Catalog 12-A. Booklet 48 pp. 8⅜ x 11 in. Illustrates and describes windows suitable for manufacturing buildings.

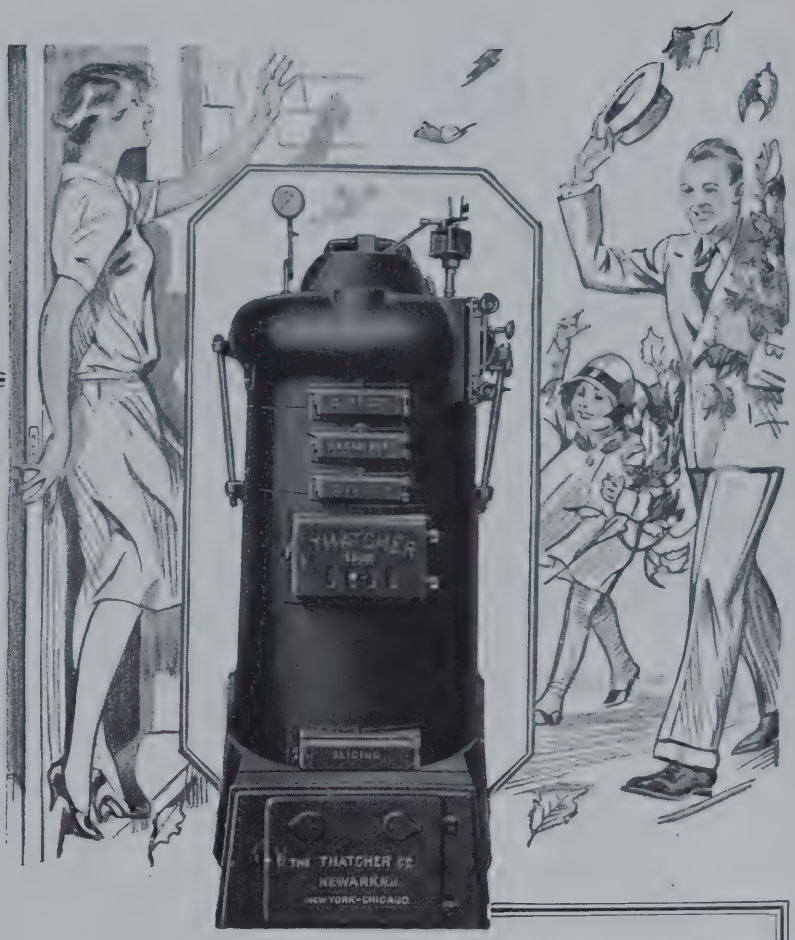
WINDOWS, CASEMENT

Detroit Steel Products Co., Detroit, Mich.
Fenestra Residential Windows. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Rolled steel windows for residences and apartments.

Crittall Casement Window Co., 10951 Hearn Ave., Detroit, Mich.
Catalog No. 22. 9 x 12 in. 76 pp. Illustrated. Photographs of actual work accompanied by scale details for casements and composite steel windows for banks, office buildings, hospitals and residences.

Genfire Steel Company, Youngstown, Ohio.
G F Steel Standard Casement Windows, Booklet, 16 pp., 8½ x 11 ins. Data and architectural details of casements.

Hope & Sons, Henry, 103 Park Ave., New York, N. Y.
Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.



Consider these advantages of the THATCHER *Round Boiler when specifying heating plants*

IT'S winter time when the houses you design are put to the test. Ample warmth and comfort—such as a Thatcher provides—assure the complete satisfaction of your clients.

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The Staggered Fire Travel which extracts the heat units from the hot gases and smoke before entering the flue;

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Low Installation Cost, due to construction of the boiler; making erection easy;

The large feed door which permits easy firing and spreading of fuel to all parts of the fire;

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THE PFAUDLER COMPANY
Laundry Chute Division Rochester, N. Y.

PFAUDLER

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 158*

WINDOWS, CASEMENT—Continued

The Kawneer Company, Niles, Mich.
Kawneer Solid Nickel Silver Windows. In casement and weight-hung types and in drop-down transom type. Portfolio, 12 pp., 9 x 11½ ins. Illustrated, and with demonstrator.

David Lupton's Sons Company, Philadelphia, Pa.
Lupton Casement of Copper-Steel. Catalog C-122. Booklet 16 pp. 8⅝ x 11 in. Illustrated brochure on casements, particularly for residences.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AIR-way Multifold Window Hardware.

Truscon Steel Co., Youngstown, Ohio
Truscon Steel Casements. Booklet, 8½ x 11 in., 24 pp. Handsomely printed with illustrations of houses equipped with Truscon Casement Windows. Illustrations of various units and combinations. Specifications, types and sizes and details of construction.
Architectural Details. Booklet, 8½ x 11 in, 16 pp. Tables of specifications and typical details of different types of construction.
List of Parts for Assembly. Booklet, 8½ x 11 in., 16 pp. Full lists of parts for different units.

WINDOWS, STEEL AND BRONZE

Detroit Steel Products Co., Detroit, Mich.
Blue Book of Steel Windows. Booklet, 128 pp., 8½ x 11 ins. Illustrated. Data on solid rolled steel windows for industrial and residential buildings.
Fenestra Residential Windows. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Rolled steel windows for residences and apartments.
Fenestra Architectural Windows. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Data on projected and counter-balanced rolled steel windows.

David Lupton's Sons Company, Philadelphia, Pa.
A Rain-shed and Ventilator of Glass and Steel. Pamphlet, 4 pp. 8⅝ x 11 in. Deals with Pond Continuous Sash, Sawtooth Roofs, etc.
How Windows Can Make Better Homes. Booklet. 3⅞ x 7 in. 12 pp. An attractive and helpful illustrated publication on use of steel casements for domestic buildings.

Truscon Steel Company, Youngstown, Ohio.
Truscon Mechanical Operators for Steel Windows. Brochure, 8½ x 11 in., 65 pp. Complete description of various kinds of installations with drawings of details.
Drafting Room Standards. Book, 8½ x 11 in., 120 pages of mechanical drawings showing drafting room standards, specifications and construction details of Truscon Steel Windows, Steel Lintels, Steel Doors and Mechanical Operators.
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Truscon Donovan Awning Type Steel Windows. 12-pp. booklet, 8½ x 11 in., illustrating typical installation and giving construction details.

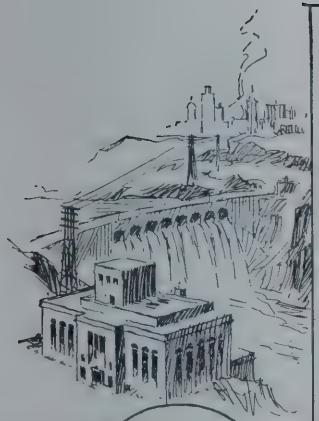
WOOD—See also Millwork

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.
American Walnut. Booklet. 7 x 9 in. 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture makers from the time of the Renaissance down to the present.
"American Walnut for Interior Woodwork and Paneling." 7 x 9 in. pages, illustrated. Discusses interior woodwork, giving costs, specifications of a specimen room, the different figures in Walnut wood, Walnut floors, finishes, comparative tests of physical properties and the advantages of American Walnut for woodwork.

Curtis Companies Service Bureau, Clinton, Iowa.
Better Built Homes. Vols. XV-XVIII, incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects, for the Curtis Companies.

Long-Bell Lumber Co., Kansas City, Mo.
The Perfect Floor. Booklet 5¼ x 7¾ in. 16 pp. Illustrated. Valuable for the data given on the use of wood for floors.
Saving Home Construction Costs. Booklet 4⅛ x 7½ in. 24 pp. Discusses economy and value in domestic building.
Experiences in Home Building. Booklet 6 x 9 in. 16 pp. Records the testimony of a number of builders and contractors as to the value of certain materials.
The Post Everlasting. Booklet 8 x 11 in. 32 pp. Illustrated. Describes the production of posts and their use in various ways.

West Coast Lumber Trade Extension Bureau, Seattle, Wash.
"Durable Douglas Fir; America's Permanent Lumber Supply." Booklet, 32 pp., 7 x 11 ins. Illustrated. Complete data on this valuable wood.
"Douglas Fir Wall Hanger." Metal-bound hanger, 31 x 32 ins. An attractive advertisement for Douglas fir.
"Where to Use Douglas Fir in Your Farm." Brochure, 32 pp., 6 x 9 ins. Data on use of this wood for farm buildings.



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Crawford Avenue Station
Chicago, Ill.
Commonwealth Edison Co.
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Indiana, Michigan Elec. Co.
Twinn Branch Plant
Mishawaka, Ind.
Kansas Gas & Elec. Co,
Wichita, Kans.
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Oklahoma Power Co.
Tulsa, Okla.
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Toronto, Ohio
Philadelphia & Reading Grain Elevator
Philadelphia, Pa.
Phoenix Utility Co.
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Los Angeles, Calif.
Southern Illinois & Missouri Bridge Co.
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Southwestern Gas & Elec. Co.
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216 Superior St. Cleveland, Ohio
419 Second Ave., So. Minneapolis, Minn.
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WHAT a common thing it is to see handsome walls and decorations marred by stained, tarnished or corroded metal switch and outlet plates. This unsightly condition can never occur when Bakelite Molded Plates are used, for this material is not discolored by handling or exposure and will not corrode in any climate no matter how humid or damp.

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The leading wiring device manufacturers offer Bakelite Molded Plates for every wiring requirement. For the protection of their customers each plate bears the trade-mark **BAKELITE.** Write to us and we will see that samples are shown to you.

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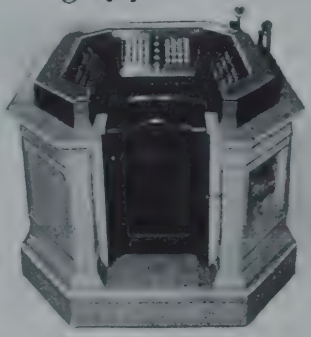
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Holtzer-Cabot Bank Signaling and Protective Systems are designed to meet every requirement of present day banking institutions.

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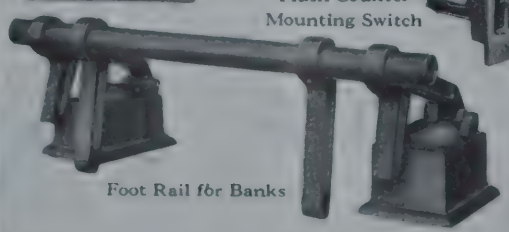
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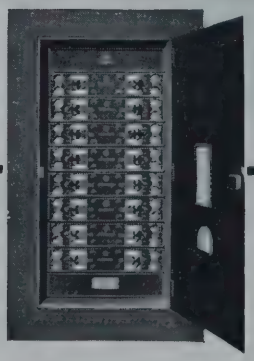

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A New Instrument Serves an Ancient Art

Floodlighting of American Radiator Building, New York City, Raymond M. Hood, Architect. Myer, Strong & Jones, Inc. Mechanical and Electrical Engineers.

The architect who provides for floodlighting *when a building is designed* is sure that his thought will be faithfully interpreted at night as well as by day; and he obviates structural changes that a future installation might necessitate. G-E Illuminating Engineers offer you their services in thus continuing your message, which else would be interrupted at nightfall.

Under G-E Floodlights the grace and dignity of the American Radiator Building carry as impressive a message by night as by day.

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710-11

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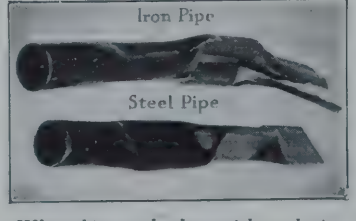
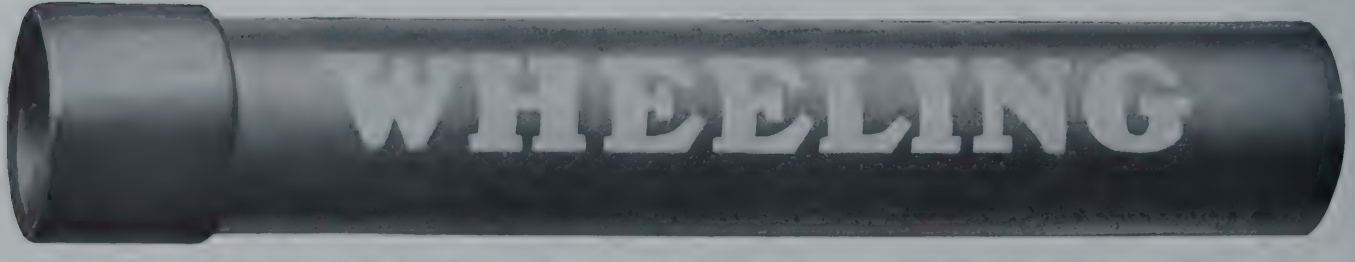
Possessing 30% more tensile strength than iron pipe—50% greater ductility—and being free from hard spots, Wheeling Standard Pipe insures uniformly satisfactory installations. Its quality is accumulated along the route of "Mine to Market" manufacture, providing a distinct economy in first and last cost.

"From Mine WHEELING STEEL *to Market"*

Writing "Wheeling Standard Pipe" into the specifications assures the builder of continued, trouble-free pipe service. The pipe fitter benefits, too, because Wheeling Standard Pipe combines the qualities essential to finest workmanship.



When this can be done with steel pipe without fracture of walls or weld it can be seen readily why steel pipe is so well adapted to every kind of use.



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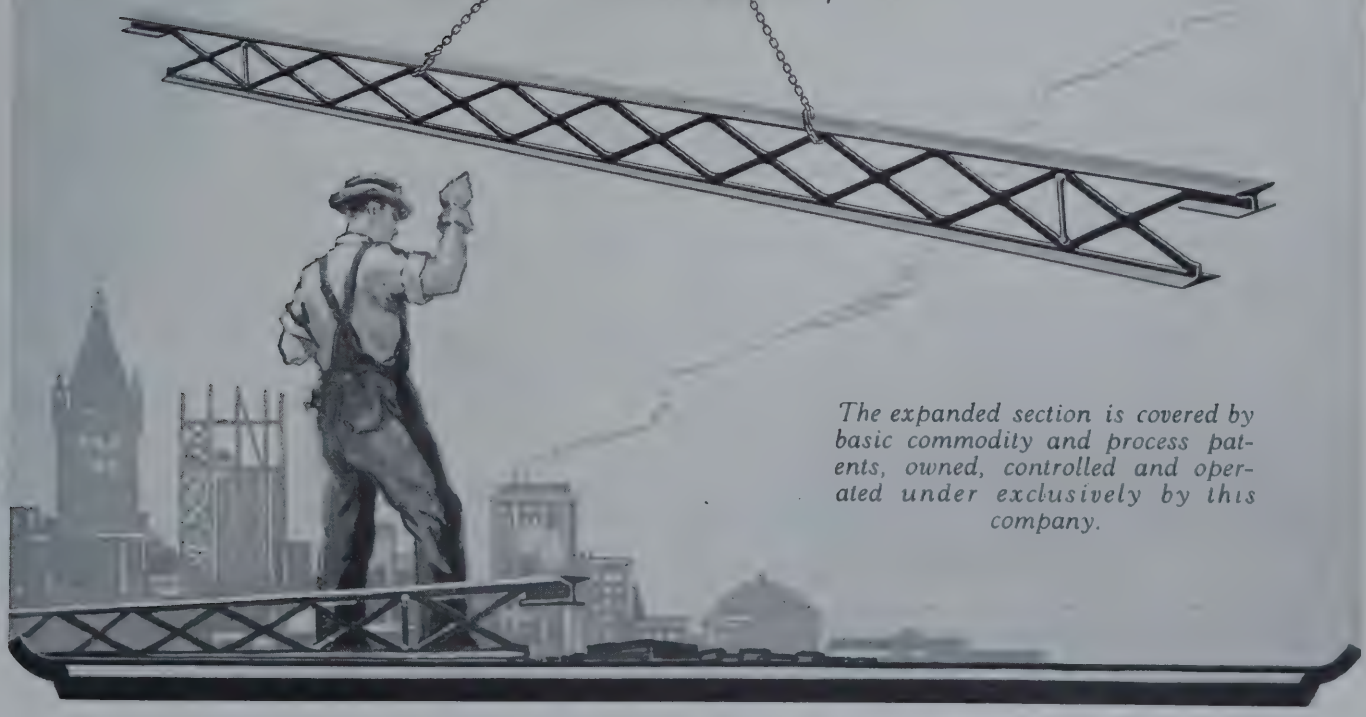
A TRUSS of one piece of steel without rivets, bolts or welds in shear or tension sums up the outstanding features of the Bates-Truss Joist.

In the Bates Expansion Process, no material is cut from the web of the original structural section. The process simply transforms the plain web of the I-beam section into an expanded lattice truss web. The act of expanding increases the depth of the beam and materially increases its strength. The points of contact of the lacing and flange members are simply unsheared, unmolested portions of the original plain web.

The properties of a Bates-Truss Joist are readily calculable by standard formulae. The strength is uniform. The process of manufacture automatically tests every joist for any possible defect in either material or workmanship. The human equation is completely eliminated.

Your request for a copy of the Bates-Truss Joist Catalog, with its complete loading tables, will be complied with promptly.

BEST
Bates Expanded Steel Truss Co.
EAST CHICAGO, IND.



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"The Pyramids Are Permanent Too"

Time- the beautifier *or despoiler*

Youth, even flaming youth, is but the threshold of maturity and the gateway to age. It is the door through which all things enter the proving ground of years. It is a glorious time—but tragically brief.

The buildings that men build know youth, youth in which even the most ordinary derive some degree of charm from their first clean freshness. But their youth, as ours, passes soon.

Those structures that are lathed with Sykes grow old gracefully, gently. For them Time is the beautifier, not the despoiler. The broad sweeps of their walls and ceilings are invulnerable to crack and lath discoloration for they are imbedded in eternal steel.

SYKES METAL LATH

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Any Pair of Feet

Can Assure the Absolute Spacing Accuracy You Specify

With the new Kalman Clip Spacer, reinforcing steel for concrete slabs can be set with a speed and accuracy never before equalled.

The steel setters place a bar over each leg of the spacer. Then they walk back—stepping on each bar. The job is finished.

Every bar is pushed into a spring clip which *automatically locks it in place*. There is absolutely no chance for guesswork and resulting inaccuracies—no chance for lateral movement. The reinforcing steel is spaced exactly as your plans specify and at the exact height above the forms.

In addition, by specifying Kalman Clip Spacers, you can help the contractor complete the steel setting in almost half the time formerly required—as fast as the setters can lay the reinforcing bars and walk back over them.

Absolute spacing accuracy gives positive assurance that the floor slab will be of uniform strength throughout.

Send today for our new Clip Spacer bulletin.

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Beam Bolsters
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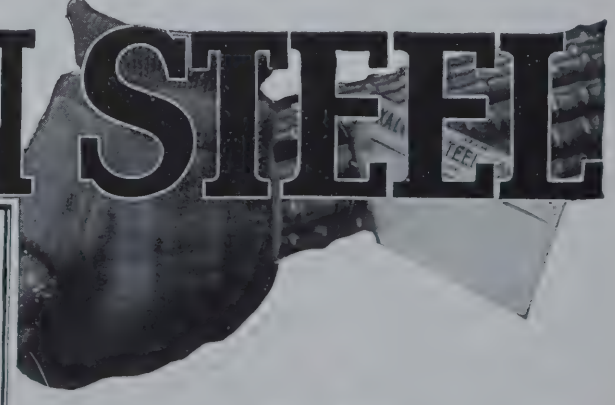

Plants or Offices at
Chicago New York Buffalo Detroit Boston Baltimore Pittsburgh Syracuse Milwaukee Philadelphia Charlotte St. Paul Kansas City Atlanta Dayton Minneapolis Youngstown

Sanger Store, Fort Worth, Tex.
W. C. Clarkson & Co., *Architects*
Southern Ornamental Iron Works, *Contr.*

Ten billion dollars

must be put to work at 5 per cent to yield sufficient income to rebuild the property destroyed annually by fire. Architects everywhere are turning to fireproof steel for interior trim to help offset this tremendous penalty.

The Sanger Store at Fort Worth is an example. It has 40 passenger and 10 freight elevators with complete enclosures of United Metal construction, including doors, frames, trim, sills, hangers and closing devices.

If you do not have a copy of the United handbook, showing the complete line of hollow metal interior trim, a postcard will bring it.

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CANTON, OHIO

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STEEL SASH CHAINS

Pioneer Sash Chain Manufacturers

Our sash chains are made of the highest grade materials

See page B-1630 Sweet's Catalog

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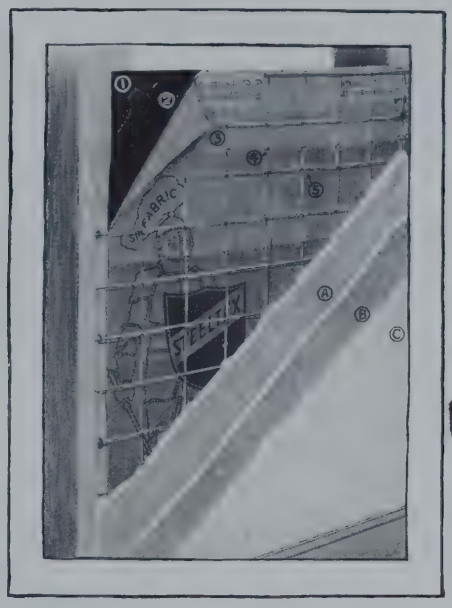


Section showing STEELTEX and how it is used

1. Waterproof backing. **2.** Waterproof compound. **3.** Second tough backing. **4.** Furring device. **5.** Rust-proofed steel reinforcing fabric. **A.** Scratch coat of plaster. **B.** Straightening coat. **C.** Finishing coat.

STEELTEX supersedes ordinary lath with rigid steel fabric, galvanized (rust-proofed), electrically welded—resists strains from all directions. It is nailed to the framework in sheets 50" x 52". The plaster is applied just as over lath. See how the steel is completely embedded.

How *STEELTEX* guards against "plaster lightning"

Insulates . . . damp-proofs . . . deadens sound

The American Concrete Institute's recommended specification for a perfect stucco base is: "The ideal job of lathing would obviously be that in which lath forms a uniform fabric over the entire structure, without seams or lines of weakness, and with *equal reinforcing value in all directions.*"

The section above shows how STEELTEX reinforces and resists strains from all directions. It eliminates crack-producing wood lath. It is galvanized against rust. It stops lath marks.

Three other important qualities in addition to reinforcing

The tough, waterproofed backing of the steel fabric insulates, damp-proofs and deadens sound. This is the one plaster base which in one material, put on with one labor cost, combines all these desirable qualities.

STEELTEX is the greatly improved successor to "National Reinforcing, Style P-214," used successfully in over 80,000 buildings. A STEELTEX job costs but little more than a wood lath job.

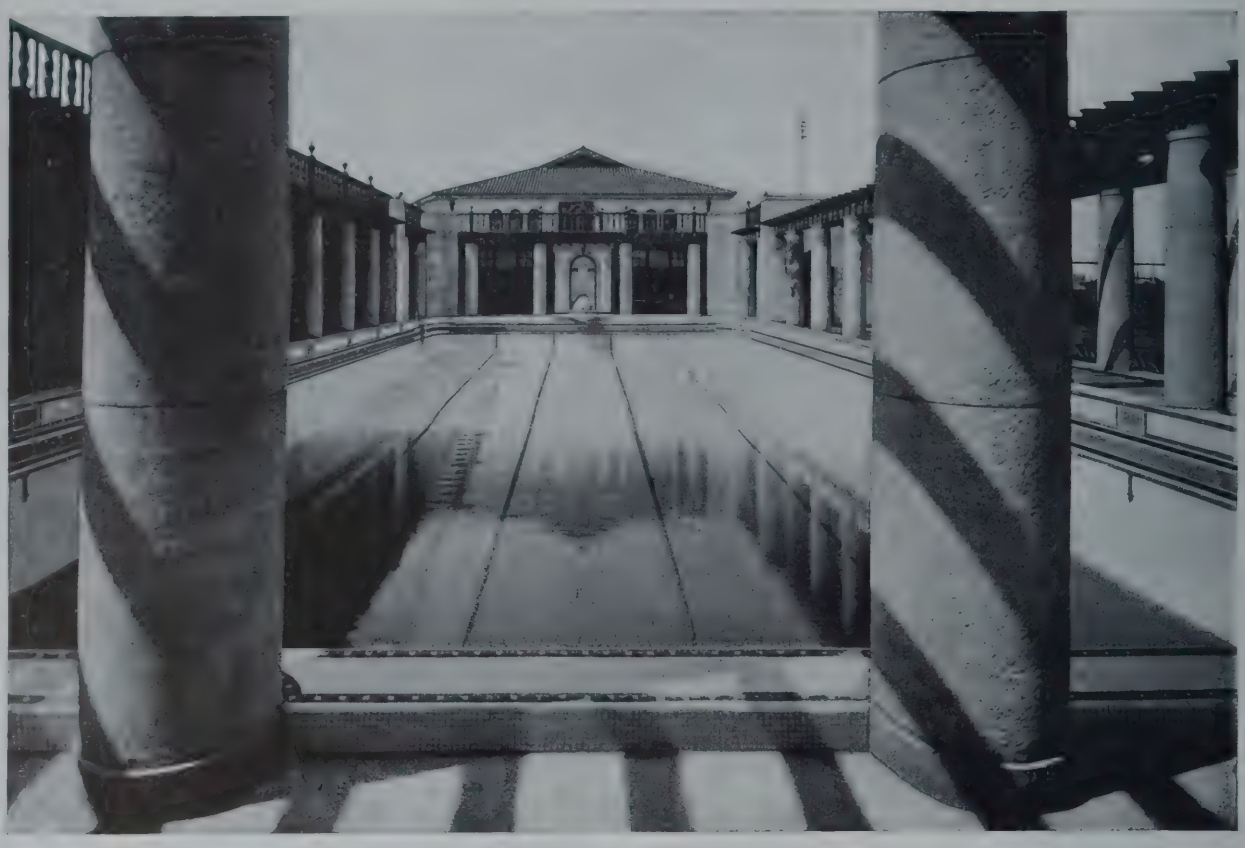
Our book, "Reinforced Plaster Construction," tells all about STEELTEX. A copy, correctly marked for your files, will be sent on request.

National Steel Fabric Company

DIVISION OF
Pittsburgh Steel Co.

612 Union Trust Building, Pittsburgh, Pa.

Atlanta, Ga., Chicago, Ill., Cincinnati, O., Portland, Ore., Seattle, Wash., Cleveland, O., Detroit, Mich., Los Angeles, Calif., San Francisco, Calif., San Antonio, Tex., New York City, N. Y., Philadelphia, Pa., Pittsburgh, Pa., St. Louis, Mo. World's largest manufacturers of welded steel fabric.



Swimming Pool at - AMERICAN COUNTRY CLUB - Shanghai, China

"SWIM IN DRINKING WATER"

"SWIMMING pool water",—says the Surgeon General of the U.S. Army,—"is essentially drinking water and must be measured by drinking water standards".

The drinking water standards of the U. S. Public Health Service limit the bacteria to 100 per cubic centimeter, and insist that the colon bacillus (the sewage germ) be absent in 100 cubic centimeters.

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SP 1

Like Stepping into a Story Book...

LIBRARY BUREAU is unusually proud of the part it has taken in making the Los Angeles Public Library, one of the most beautiful in the country. And in order that Librarians and Architects throughout the country may have a better idea of its beauty, we have prepared a booklet, "Like Stepping into a Story Book" which contains graphic descriptions and floor plans of every room. A free copy is yours for the asking.

To enter the beautiful new Los Angeles Public Library is to come upon a vision of absolute charm—like entering a magic castle in fairyland with its rich, beautiful colors in intricate designs. The building itself has an exquisite harmony of outline. It is an idyllic setting. And, within, it presents an old-world charm which bespeaks beauty, dignity and quietness.

It is a fairy-story building, but a practical building too, for beauty and utility have been combined to the fullest possible extent in the Library Bureau equipment and furniture which is to be found in every room.

The furniture is designed and built in strict keeping with the Spanish influence of the interior. It has beauty, but more than that it is sturdy and serviceable, being planned and constructed to give a lifetime of service.

Such details as these, and more, are carefully explained and illustrated in the booklet pictured above, "Like Stepping into a Story Book." A limited edition of this beautiful brochure has been especially printed for Librarians and Architects. You will welcome a copy we are sure. The coupon will bring yours, *free.* Mail it today!

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Division of
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A Flexlume Bank Display of pure copper bronze with raised translucent letters of snow-white glass.

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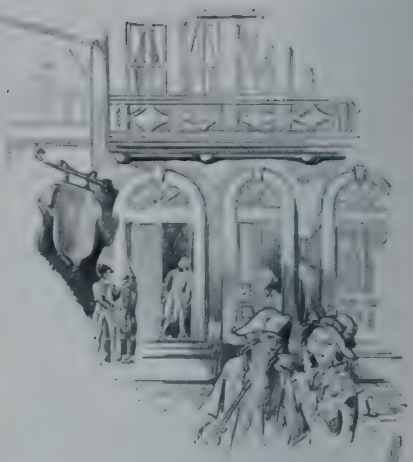

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Proportioning Procter & Gamble's Building Dollar

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May we send you well illustrated data, compiled to show the value of built-in conveying systems for industrially planned buildings?

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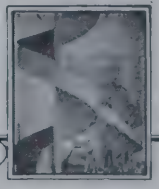

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Cleveland, 819 Hippodrome Building
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Cable Address: Gravity

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Smith, Hinchman & Grylls, Architects.
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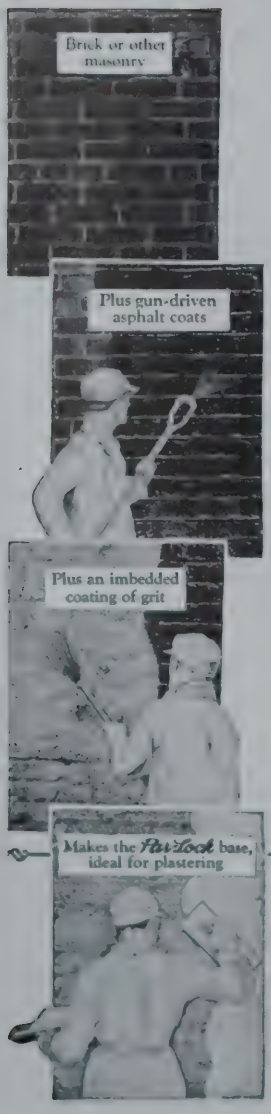
Par-Lock applied to interior of all outside walls by the Par-Lock Appliers of Michigan.



Behind Beautiful Brickwork

the admirer expects to find structural integrity proportioned to its exterior charm. In this splendid office building, the masonry is damp-proofed and its insulating value improved, while the plaster is safeguarded against cleavage and stain by an application of

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P-14

The Builder's Building, Chicago, Illinois, is equipped with American No. 130 Hot Galvanized Sash Chain—over 5 miles of it.

Architects
Graham-Anderson-Probst & White

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The labor cost of replacing a window suspension is many times the material cost. It means tearing out the framework, mussing up busy offices, all in all an unpleasant ordeal for the tenant.

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* RUST-FIRE:—The only difference between rusting and burning is time—both are oxidation. You can see and feel the fire produced by rapid burning. But when metal rusts the process is too slow to be seen. Rust is the ash of this fire.

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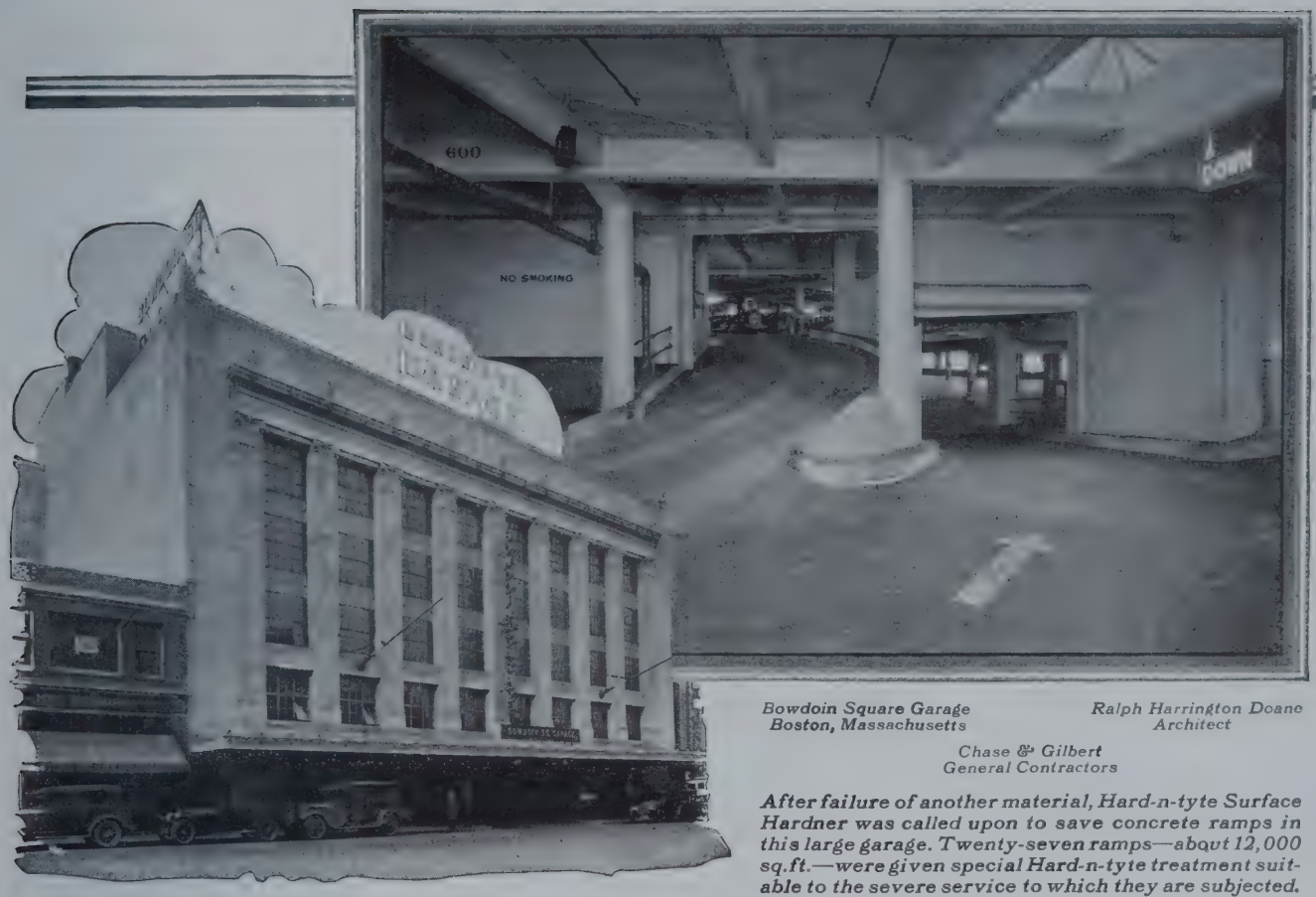

Bowdoin Square Garage
Boston, Massachusetts

Ralph Harrington Doane
Architect

Chase & Gilbert
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After failure of another material, Hard-n-tyte Surface Hardner was called upon to save concrete ramps in this large garage. Twenty-seven ramps—about 12,000 sq.ft.—were given special Hard-n-tyte treatment suitable to the severe service to which they are subjected.

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Hard-n-tyte Surface treatment makes concrete surfaces hard and minimizes dusting, thus giving them the ability to withstand heavy duty—and as a consequence long life.

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Sound-insulation—as applied to the material—includes both the elimination of sound transmission from room to room and the reduction of disturbing reverberation within a room itself. The importance of this advantage can hardly be over-estimated in any large operation.

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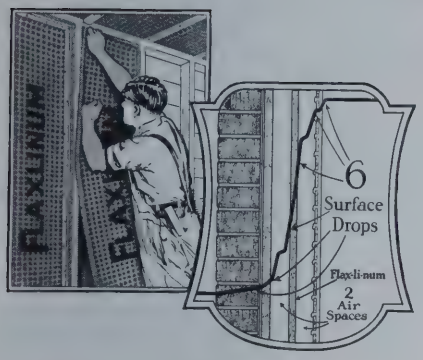

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Used correctly in walls, one-half inch FLAX-LI-NUM is *equivalent to three-fourths inch insulation* used as a substitute or installed against the sheathing. U. S. government tests prove this. The FLAX-LI-NUM method creates *two* insulating air spaces instead of one, and six surface resistances instead of four.

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FLAX-LI-NUM goes in fast. The builder simply wedges the sheets in tight—*it goes in right.* The semi-rigid sheets hold themselves in place while the builder drives home a few nails.

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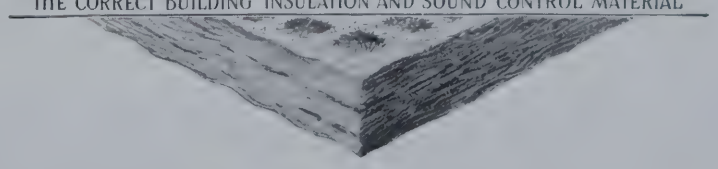
Flax-li-num

THE CORRECT BUILDING INSULATION AND SOUND CONTROL MATERIAL



FLAX-LI-NUM INSULATING CO., A. F.
St. Paul, Minnesota

Send me complete information on FLAX-LI-NUM Insulation.

☐ I am interested in home construction.
☐ I am interested in apartment and hotel design.

Name.....
Street Address.....
City..... State.....

No. 39 of a series of advertisements featuring prominent laundry installations

PLANNED from the start

A view of the Illinois Masonic Hospital Laundry, similar to dozens of fine institutional laundries "American" engineers have helped to plan and install. Write for facts about floor space and equipment.

George S. Schreiber, 105 W. Monroe St., Chicago, Ill., Architect

this modern "American" laundry

OF course the Illinois Masonic Hospital has its own laundry, "American" equipped throughout. Nowadays such a department is planned from the start—incorporated in the preliminary designs.

We have prepared some highly interesting printed matter about institutional laundries, similar to the one shown above. You'll find it helpful, because it embodies the experience of our engineers who have planned hundreds of "American" laundries, on this continent and abroad.

Remember, too, that American Laundry Machinery Company engineers are always eager to cooperate with you in matters of modern laundry practice. Their services are at your disposal without obligating you in any way. A letter will bring a trained man to your office.

The American Laundry Machinery Company

Norwood Station, Cincinnati, Ohio

THE CANADIAN LAUNDRY MACHINERY CO., LTD.
47-93 Sterling Road, Toronto 3, Ont., Canada

Agents: BRITISH-AMERICAN LAUNDRY MACHINERY CO., LTD.
Underhill St., Camden Town, London, N.W.1, England

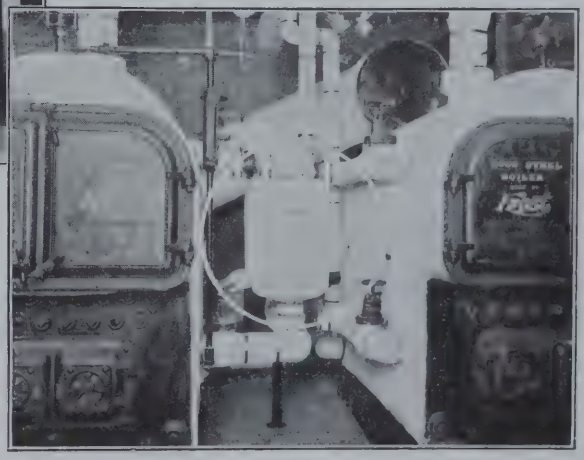
HOT WATER

AT LOWEST POSSIBLE COST FOR DETROIT

AT the Hannon Apartments, Detroit, the owners are delighted with the economy and effectiveness in heating a supply of

HANNON APARTMENTS, DETROIT

Triple Copper Coil Heater used in this installation



running hot water the Excelso-way, summer and winter alike.

No separate gas or other fire is necessary. With two Excelso Indirect Water Heaters connected between the heating boiler and hot water storage tank, the bother and cost of the separate fire is saved.

Whether single or apartment residences, hotels, offices, factories or mercantile buildings, consider the tested and proved Excelso system for any buildings you plan. Full information on request.

Excelso Products Corporation

DIVISION OF AMERICAN RADIATOR COMPANY

69 CLYDE AVENUE BUFFALO, N. Y.

Nationally Distributed by Leading Wholesalers and Boiler and Radiator Manufacturers

EXCELSO WATER HEATERS

Sizes for One Family or One Hundred Families

VITROLITE

THE VITROLITE COMPANY
Suite 604, 133 W. Washington St., Chicago
Factory: Parkersburg, W. Va.

SALES REPRESENTATIVES

Atlanta	Dallas	New York	St. Louis	Melbourne
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Buffalo	Los Angeles	Portland	Copenhagen	San Juan
Cincinnati	Miami	Providence	Havana	Shanghai
Cleveland	Minneapolis	San Francisco	Johannesburg	Vancouver, B. C.
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Vitrolite wainscoting in all corridors and washrooms in the new Barlum Tower. Vitrolite toilet compartments and decorated Vitrolite Barber Shop in the Barlum Hotel, Detroit. Bonnah and Chaffee, Architects. Progressive architects everywhere are specifying Vitrolite for their most important buildings.

COLONIAL INTERIORS

Photographs and Measured Drawings of the Colonial and Early Federal Periods

By LEIGH FRENCH, Jr., A. I. A.

INTERIOR woodwork during the Colonial and early Federal periods was exactly what is demanded for "Colonial" interiors today. The character of workmanship in the colonies insured craftsmanship of excellent quality, and this, together with design carefully studied from the simpler contemporary English work, resulted in woodwork which it would be difficult to improve upon. For this reason close study is being made of such old American interiors as still exist, and measured drawings make possible the reproduction today of much of the finest woodwork of the seventeenth or eighteenth century. These forms, while they involve not a little subtlety in the details of design, demand merely the use of simple mechanical processes which are not beyond the skill of any reasonably proficient woodworker, sometimes of an ordinary carpenter.

IN this valuable work on the early American periods there are given illustrations from new photographs of interiors of the time, many of which are little known. These illustrations are of rooms of different kinds and of widely different types,—the early, somewhat severe type as well as that which was later and more refined and luxurious. Valuable illustrations are supplemented in many instances by invaluable working drawings,—details of wall paneling, mantels, over-mantels and fireplace surrounds; door and window trim; china closets; newels, balusters and other details of stairways, and designs for the stenciling of floors, together with notes on the colors originally used. It is a volume which in its practical usefulness will be of great value to architects whose work involves much use of early American interior design.

125 plates, 10 x 15 inches. Price $15

ROGERS & MANSON COMPANY - - - 383 Madison Avenue, New York

Lockwood, Greene & Co.,
Archts. and Engrs.

MUNICIPAL AUDITORIUM, Atlantic City
Largest ground plan of any building in the world.

M. B. Markland Co.,
Builders

THE WATERPROOFING CO.
ESTABLISHED 1901
NEW YORK BOSTON
COW BAY WATERPROOF CEMENT

Waterproofed with Cow Bay Waterproofing Cement by the Waterproofing Company

The basement of this building, on the edge of the Atlantic Ocean, is being waterproofed by us with Cow Bay Waterproof Cement. Large jobs such as this one do not divert us from our plan of keeping a goodly number of small jobs going. But large or small, the quality of our workmanship is the same,—the best.

If you are inclined to specify Cow Bay Cement Waterproofing, please let us give you our figure on the work before general bids are called for. Then you can specify us knowing what the job will cost and can make a proper allowance for our work in the expense budget.

See our Catalogue in Sweet's

The Waterproofing Co.

Engineers and Contractors for Waterproofing

345 E. 33rd St., New York 65 Albany St., Boston

Quiet . . .

Your clients will ask you

Is oil heating expensive?

MANY Quiet May owners tell us that they are able to make a decided saving by heating with oil. There is nothing mysterious about this. It is perfectly reasonable because the Quiet May operates only when the temperature of the house falls below 68° or 70°. In other words, oil is burned only when heat is needed.

With coal, on the other hand, the fire burns all the time, and coal is used up even though the house does not need heat.

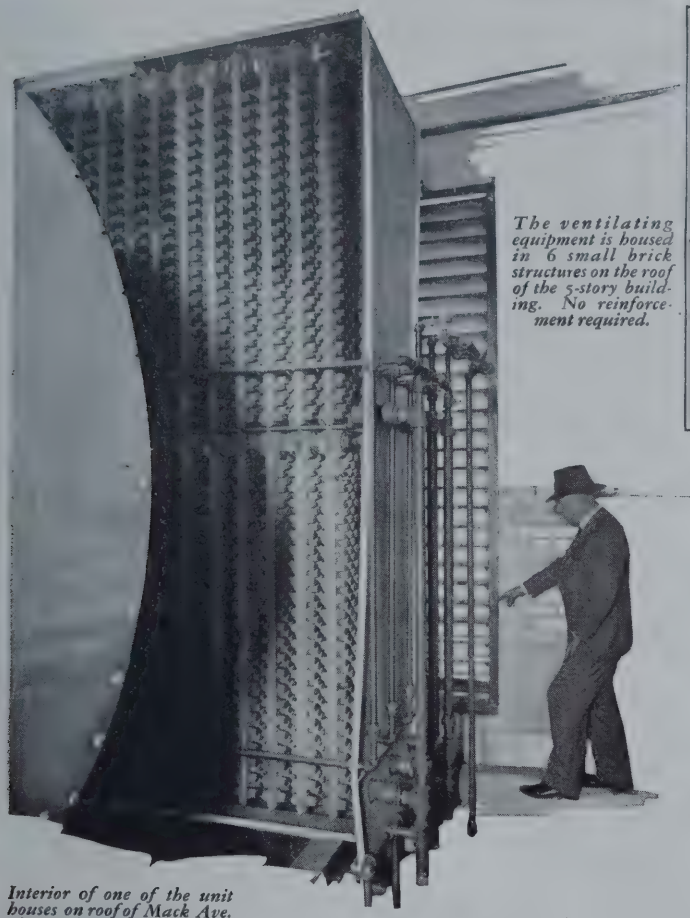
As an architect you will also want to know more about the company that manufactures the Quiet May. Any bank or commercial rating company can tell you about the standing of the May Oil Burner Corporation. And we ourselves shall be glad to supply you with a list of Quiet May dealers and Quiet May owners whenever you are interested.

MAY OIL BURNER CORPORATION, Baltimore, Md.

QUIET MAY

AUTOMATIC OIL BURNER

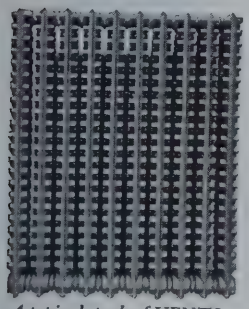
VENTO



The ventilating equipment is housed in 6 small brick structures on the roof of the 5-story building. No reinforcement required.

New Briggs Body Plant installs 11,000 sq. feet VENTO

Interior of one of the unit houses on roof of Mack Ave. plant of Briggs Mfg. Co., Detroit, (Photo taken during course of construction.) Heating & Ventilating Contractors, Pittlekow Heating & Engineering Co; Fan equipment — American Blower Company.



A typical stack of VENTO Cast Iron Heaters

An uncommonly effective ventilating system is provided for the new paint shop of the mammoth automobile body plant of the Briggs Manufacturing Company on Mack Ave., Detroit.

The ventilating equipment consists at present of six units, each composed principally of a motor-driven fan and 11,000 square feet of VENTO Blast Heaters. The equipment is placed on the roof of the 5-story factory, and *no reinforcement to the building was required.*

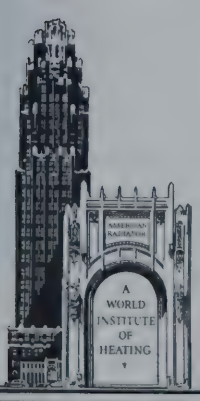
The air in the paint shop is changed every 2½ minutes, and the blast temperature averages 70 degrees F.

This installation gives further proof of the high rate of heat transfer through VENTO cast iron blast heaters. The stacks are exposed almost entirely to the outside. Four to six times the volume of air usually required in industrial systems is instantly warmed in the passage through stacks of VENTO heaters arranged 19 long, 2 high and 3 deep.

* * * *

Architects and Engineers taking alternate figures find the net installed cost of VENTO to be less than other types of heaters. This should eliminate concern as there has never been any record of VENTO failure in over a quarter of a century.

Our Engineers' Data Book and other illustrated literature on ventilation should be in the hands of Architects, Engineers and Contractors for public buildings and factories. These books are sent free on request.



AMERICAN RADIATOR COMPANY

VENTO DEPARTMENT: 816-820 South Michigan Ave., Chicago

Makers of IDEAL Boilers, AMERICAN Radiators, ARCO Tank Heaters, VENTO Ventilating Heaters, AIRID Air Valves, MERCOID Controls and devices for drying, humidifying, cooling and refrigeration.

Showrooms and sales offices: New York, Boston, Providence, New Haven, Newark, Philadelphia, Baltimore, Washington, Richmond, Buffalo, Pittsburgh, Cleveland, Detroit, Cincinnati, Atlanta, Chicago, Milwaukee, Indianapolis, St. Louis, St. Paul, Minneapolis, Omaha, Kansas City, Denver, San Francisco, Los Angeles, Seattle, Toronto, London, Paris, Milan, Brussels, Berlin.

FREMONT, NEBRASKA HIGH SCHOOL
A. H. Dyer, *Architect*

"GLOBE" ventilators are efficient for every Building Type

The ventilating requirements for schools are very exacting. "Globes" have been rendering exceptionally good service in this field for over 50 years.

GLOBE VENTILATOR COMPANY
TROY, NEW YORK DEPARTMENT F

The Herman Nelson hiJet Unit Heater

With

The Wedge Core RADIATOR
INDESTRUCTIBLE
TRADE MARK

Leak-proof, rust-proof, indestructible. Lower installation cost, smaller pipe lines, no reducing valves necessary. Never requires service. Freezing cannot harm it. Operating steam pressure from 1 to 150 lbs. Can be suspended from pipe lines or moved from place to place. Long range heat distribution. The ideal heating unit for

Factories · Mills · Railroad Shops · Roundhouses
Warehouses · Garages · Gymnasiums · Auditoriums

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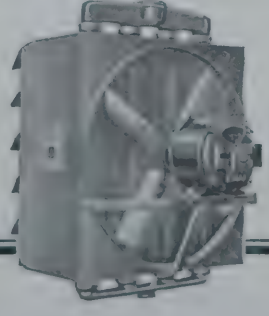
THE HERMAN NELSON CORPORATION
MOLINE ILLINOIS
Makers of the
UNIVENT *and the* HERMAN NELSON INVISIBLE RADIATOR



Write for your copy of the Herman Nelson hiJet Unit Heater catalogue

HESS CABINETS and MIRRORS

Snow-White Steel

VENETIAN STYLE

A De Luxe Cabinet, entirely concealed by the beautiful etched mirror. The last word in bath room furnishing. Made in three sizes.

See Sweet's Index; or write for illustrated booklet.

HESS WARMING & VENTILATING CO.
Makers of Hess *Welded Steel* Furnaces
1216 S. Western Avenue, Chicago.

Spencer
steam, vapor or hot water
Heaters

A size and type for every heating purpose and every kind of building

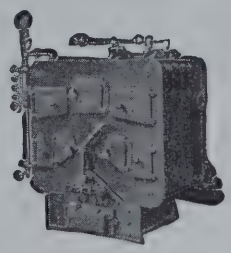
Spencer Junior Hot Water Heater—capacity in direct cast iron radiation equivalent, water, 300 to 600 square feet.

SPENCER HEATER COMPANY
WILLIAMSPORT, PA.

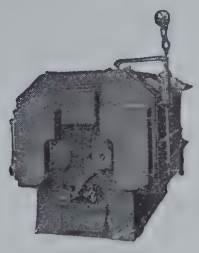
General Offices:

New York City Boston Philadelphia Baltimore Buffalo Rochester
Hartford Albany Syracuse Scranton

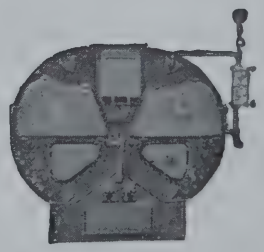
Spencer No. 1 Single Grate Heater, capacity in direct cast iron radiation equivalent, water, 800 to 1450 square feet; steam or vapor, 500 to 900 square feet.



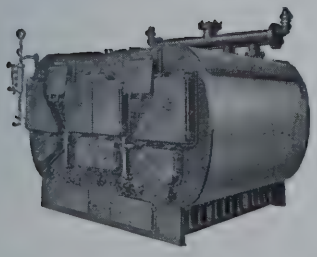
Spencer No. 2 Double Grate Heater, capacity in direct cast iron radiation equivalent, water, 1750 to 3800 square feet; steam, 1100 to 2350 square feet.



Spencer Tubular Steam Heater—15 to 21 Series—capacity in direct cast iron radiation equivalent—1900 to 3600 square feet.

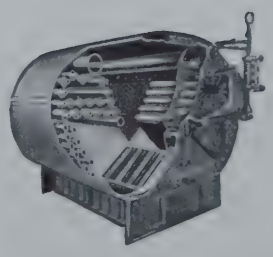


Spencer Tubular Steam Heater—50 Series—capacity in direct cast iron radiation equivalent 4500 to 7000 square feet.



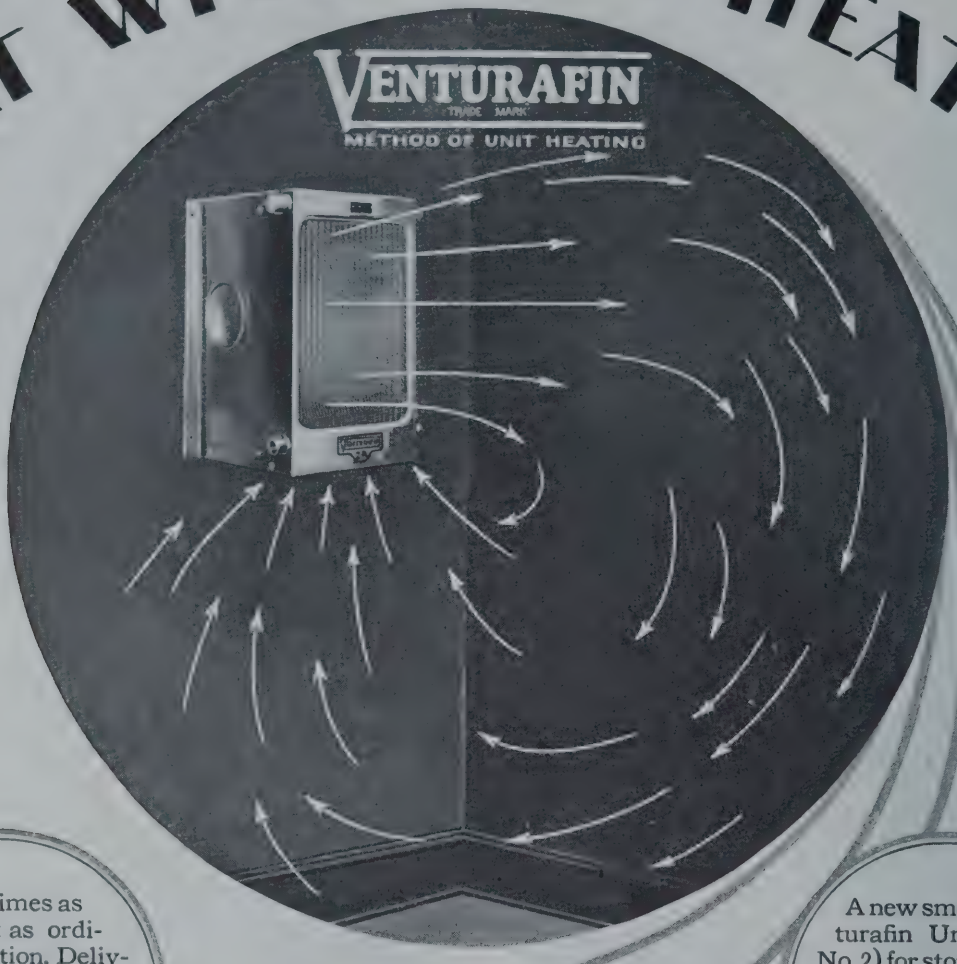
Left—Spencer Tubular Steam Heater—100 Series—capacity in direct cast iron radiation equivalent 7500 to 15000 square feet.

Right—Interior view showing construction principle.



All Spencer Heaters may be hooked up in battery where a flexible supply of heat is needed, or where the total radiation tax is greater than the capacity of a single boiler.

HEAT WITH UNIT HEATERS



Five times as efficient as ordinary radiation. Delivers from 450 to 900 cubic feet of hot air per minute. Cheaper to buy, install and operate.

A new small Venturafin Unit (Size No. 2) for stores, offices, shops, garages, factories, showrooms, warehouses, depots, and countless other places.

Ventilates as it heats—gives positive heat control and more even distribution of heat in working areas — and is pleasing in appearance.

One-quarter the weight of an equivalent amount of radiators, wall coils, etc., and occupies only one-tenth the space.

Heats up in a jiffy in the morning. Reduces heat losses to a minimum. Forces heat where you want it, when you want it.

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AMERICAN BLOWER COMPANY
BRANCH OFFICES IN PRINCIPAL CITIES
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"Sirocco" VENTILATING, HEATING, AIR CONDITIONING, DRYING, MECHANICAL DRAFT
Manufacturers of all Types of Air-Handling Equipment ——— Since 1881

UNIVENT and Glass—*make the difference*

TO TRY to ventilate the office building through open windows has proven futile. On still days little air comes in. On other days blustering winds bring in smoke, soot, snow and the distracting noise of a great city. As the lesser of two evils windows are closed, and the workers suffer the inevitable results of stuffy air: lassitude and lowered efficiency.

The Univent solves the problem. It brings into the office outdoor air, cleans it, heats it when necessary, and diffuses it to every nook and cranny of the room—with invigorating air motion, but without draft.

No 4 o'clock let down, no fluttering papers, no cold inducing drafts—winter or summer—in the Univent-ilated room.

Labor—either mental or physical—is the most expensive thing in the world. Eliminate mistakes—keep employees healthy and productive by giving them the invigorating air conditions that keep everyone from executive to office boy mentally and physically alert.

*Union Electric Light & Power Bldg., *equipped with . . .*

UNIVENT (TRADE MARK)

VENTILATION

The Univent is not an exhaust system—it is real outdoor ventilation indoors—with dust and noise left out.

Architect and heating engineer should know why the Univent is endorsed by building managers, business executives, and school authorities as the most economical, flexible, and easiest controlled ventilating system known. A request on your letterhead for Architect's Edition of "Univent Ventilation" will bring you some interesting facts.

* * *

**Union Electric Light & Power Bldg.*
St. Louis, Mo.
Partnership Estate of Albert B. Groves, Deceased; A. A. Aegerter, surviving partner

Manufactured only by THE HERMAN NELSON CORPORATION, *Moline, Ill.*

Builders of Successful Heating and Ventilating Equipment for 20 Years

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Anybody would like this Tico Boiler installation

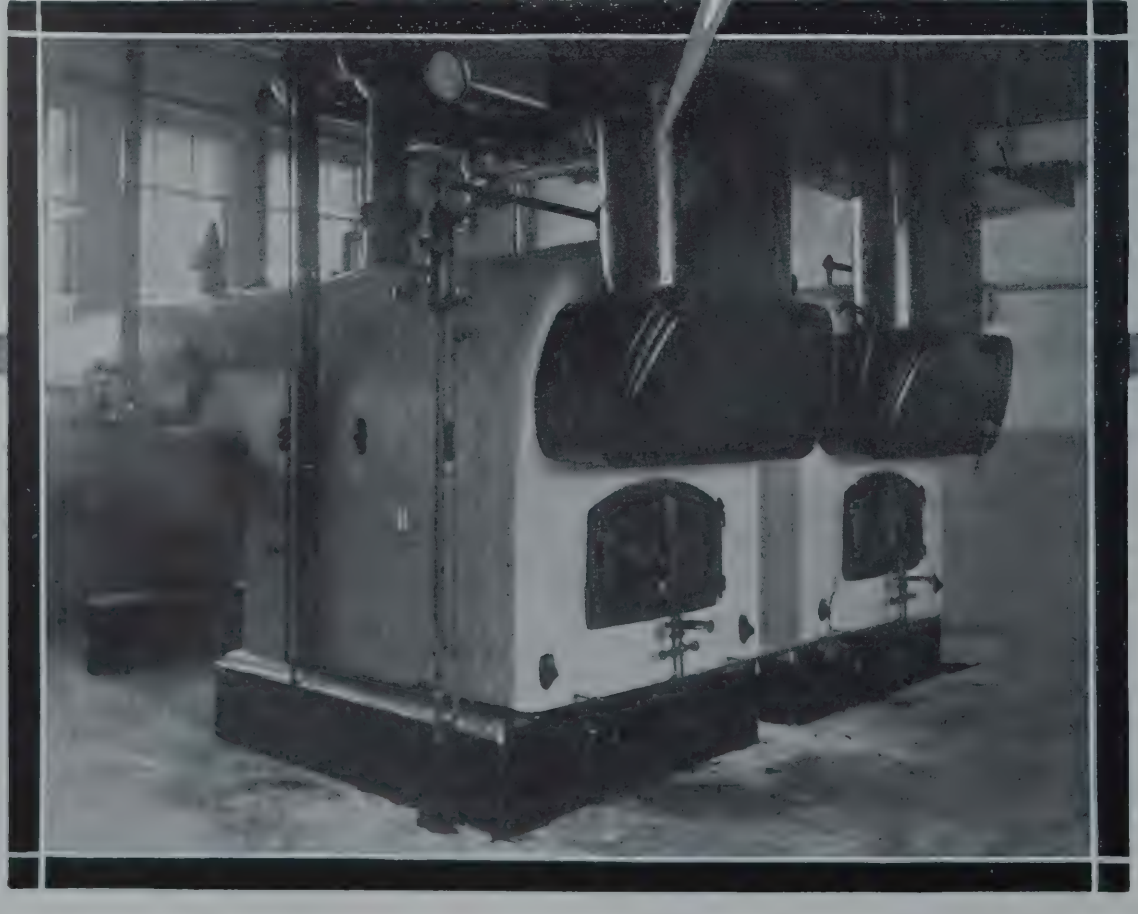
JUST notice the neat and compact design of these two TICO Boilers recently installed for the new Seybolt Bakery in Tampa, Florida, by the A. W. Dovel Company, and you'll agree that TICO builds 'em right.

These boilers are gas-fired. The tubing is seamless and the general design and construction more than meets the strict A.S.M.E. code.

No matter what fuel you use there's a TICO Boiler scientifically designed to meet your exact requirements best.

Why not inquire?

THE TITUSVILLE IRON WORKS COMPANY
Titusville - - - Penna.



Now see what WILLIAMS has done to OIL-O-MATIC

A NEW Oil-O-Matic is now available. One that surpasses even the former model which brought world leadership. For the past three years more than twice as many home-owners selected it as any other make.

Better than ever, the complete range of oil fuels may be used with equal facility. And notably cheap Fuel Oil—so rich in heat value—that makes Oil-O-Matic the lowest in operating cost. This exceptionally wide choice of fuel assures a never-failing supply.

In design and workmanship, Model J sets a new standard in oil burner excellence. Of course, the fundamental principles that have kept Oil-O-Matic so far in advance of the front ranks, are all rigidly followed. Built with watch-like precision and finished in effective French blue, it lends distinction to any heating equipment.

New sturdiness has been built into it. Compactness and simplicity heretofore thought impossible. The automatic operation of the burner is regulated by a unique device with but one moving part —and that a highly polished steel ball! Even the electrical switches are hermetically sealed in glass to insure dust-free contacts. New quiet and lack of vibration are achieved by a rubber cushion under the motor which is built exclusively for this one model.

To architects and builders, Model J offers a tremendous opportunity. In whatever type of building you are interested this remarkable new oil burner meets the most exacting heating requirements. Write today for "Specifying Oil Heat." The coupon below brings it to you free and postpaid.

Williams Oil-O-Matic Heating Corp.
Bloomington, Illinois
Please send us without obligation a copy of "Specifying Oil Heat." AF127

Name .....

City..... State.....

WILLIAMS OIL-O-MATIC HEATING

After 8 years of success
Now a new improved
OIL-O-MATIC

Model J Especially designed for fine residences, apartments, theatres, stores, clubs, schools, hospitals, churches, banks, offices, garages, greenhouses, etc.

The Dunham Differential Vacuum Heating System

Based on Bed-Rock Laws of Physics

THE OPERATING principle upon which the Dunham Differential Vacuum Heating System is established is a bed-rock law of physics.

Engineers know this law as the Steam Table. Simply stated, it is that "the boiling point of a liquid is the temperature at which the pressure of the saturated vapor first becomes equal to the pressure existing outside." (Millikan.) Professor Millikan further states: "Since the boiling point has been defined as the temperature at which the pressure of the saturated vapor is equal to the outside pressure, and since the pressure of a saturated vapor varies rapidly with the temperature, it follows that the boiling point must vary as the outside pressure varies."

Due to the workings of this law it is possible to produce steam of greatly varying temperatures in a Dunham Differential Vacuum Heating System simply by varying the pressure to which the water in the boiler is subjected. This is mechanically accomplished by means of the Dunham Differential Vacuum Pump.

The importance of the Dunham application of this basic law of physics to the solution of one of the greatest problems of heating cannot be overestimated. During 95% of the heating season ordinary steam heating systems overheat because steam at 212 degrees or higher is circulated in the radiators and piping. No provision is made, nor can any be made, in such heating systems, to regulate the heat emission from the radiators to conform to the heat loss from the building. Consequently, windows are thrown open to cool the overheated rooms, and a heavy fuel waste results.

The Dunham Differential Vacuum Heating System combats this waste by utilizing steam produced at varying sub-atmospheric pressures. This sub-atmospheric steam is maintained at the proper pressure, and temperature, to provide comforting warmth in every room, with an input of heat into the radiators sufficient to compensate for the heat loss from the building, but without the overheating common to ordinary heating systems.

No new principle is used to attain this long-sought goal. The principle is as old as the very atmosphere which surrounds our earth. The Dunham devices which utilize this important principle are, however, **new, attention-compelling and revolutionary.**

They have made the Dunham Differential Vacuum Heating System the outstanding heating development of the decade, and one destined to work as radical a change in present-day heating methods as did the Dunham Thermostatic Radiator Trap when it revolutionized steam heating a quarter century ago.

The DUNHAM Difr-enshal-Vacm Heating System — A FIXED DIFFERENTIAL IN PRESSURE — A VARIABLE DEGREE OF VACUUM

Look for the Name DUNHAM

This nameplate identifies a genuine DUNHAM Radiator Trap

U. S. Patent No. 1644114. Additional patents in the United States, Canada and Foreign Countries now pending

C. A. DUNHAM CO.

DUNHAM BUILDING

450 East Ohio Street, Chicago

Over seventy branch and local sales offices **in the United States, Canada and the United Kingdom, bring Dunham Heating Service as close to you as your telephone.**

Consult your telephone directory for the address of our office in your city. An engineer will counsel with you on any project.

The Dunham Differential Vacuum Heating System

Architect:
Merritt J. Morehouse, Chicago

Heating Contractors:
Hunter-Preel Co., Battle Creek

1866 The Battle Creek Sanitarium 1927

DUNHAM HEATING SERVICE is a national service. Also it services many national institutions. Among such is the Battle Creek Sanitarium which, from its beginning in a two-story house sixty-one years ago, has developed into the group of buildings shown in the oval and having a world-wide recognition of leadership in the science of "artificial sunlight" for therapeutic purposes. To the six-story Main Building, Main Annex, Hospital, Dormitories, Gymnasium and Recreational Centre, Maintenance Buildings, etc., is now added the magnificent

The DUNHAM
REG. U.S. PAT. OFF.
Difr-enshal-Vacm
A FIXED DIFFERENTIAL IN PRESSURE — Heating System. — A VARIABLE DEGREE OF VACUUM

U. S. Patent No. 1644114
Additional patents in the United States, Canada and foreign countries now pending.

New 15 Story "Central Building"

here shown. If not already in operation as you read this page, it will be in occupancy very shortly. The new structure will harmonize with the other buildings and is located at the south end (right) of the main building shown in oval. The ground floor, to be used for lobbies, offices and other purposes, is two stories in height. The next floor on a level with the first floor of the present main building will be used for parlors, lounges and writing rooms; the remaining twelve stories will be the guest floors.

Devoted to scientific health training, the Sanitarium very analytically investigated the "heat" question for the new Central Building and selected and installed a Dunham Differential Vacuum Heating System. With expert physical and dietary direction the Sanitarium offers a delightful environment as a vacation spot. It is so used by an ever increasing number of congenial folks from all sections of the country. Already this year no less than 7,000 persons have been registered as guests.

The name of Dr. John Harvey Kellogg, who has actively managed the Sanitarium for half a century, is a synonym of "Battle Creek." With him are associated Dr. Charles E. Stewart and M. W. Wentworth, with a corps of able assistants and 1,500 employes.

C. A. DUNHAM CO.

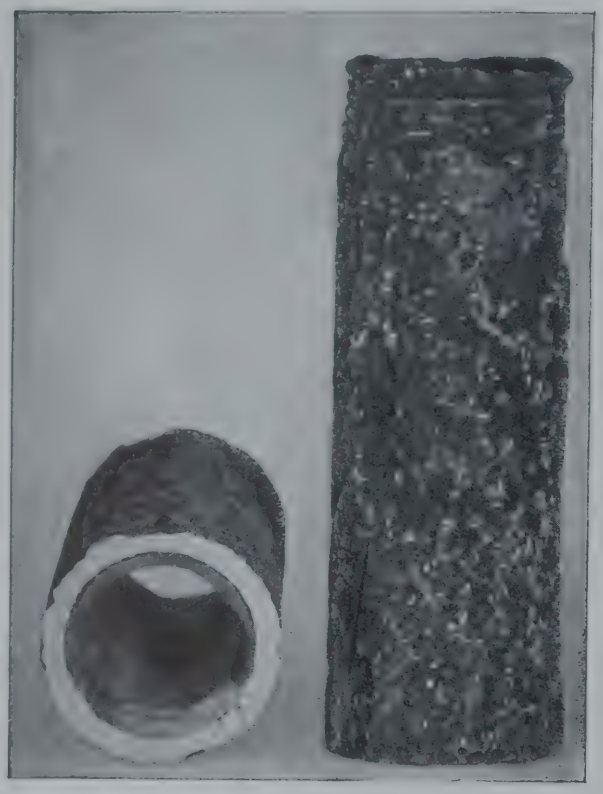
Dunham Building

450 East Ohio Street - - Chicago

Over seventy branch and local sales offices in the United States, Canada, and the United Kingdom bring Dunham Heating Service as close to you as your telephone.

Consult your telephone directory for the address of our office in your city. An engineer will counsel with you on any project.

51 Years of Use
Shows No Deterioration



Pipe in use underground in Lynn, Mass., from 1874 to 1925. Removed when building was torn down. Exterior badly corroded, interior clean and of original diameter.

Typical of what may be expected of

CEMENT LINED PIPE

Costs one-half as much as brass.

Used by ninety-four cities and towns with corrosive waters for service lines under permanent streets.

CEMENT LINING now furnished by Cast Iron Pipe manufacturers in pipe to be used for corrosive waters.

Standard Fittings only are used. Furnished with a special shaped lead lining for making perfect contact with cement lining in pipe.

CEMENT LINED PIPE in buildings for cold water lines is economical and permanent. It serves equally well for hot water and most acids.

CEMENT LINED PIPE CO.
LYNN, MASS.

Backed up by four great manufacturing plants in a nation-wide service system, Walworth stands ready to meet specifications of architects and engineers for valves and fittings for piping installations of every description.

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VALVES, FITTINGS, TOOLS *for* STEAM, WATER, GAS, OIL *and* AIR

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VENTADOOR
A ventilating panel for doors

When the "Ventadoor" is used the tops of all doors can be made to "line up," yet cross ventilation is not sacrificed.

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NEW YORK CITY

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Only *Genuine* Wrought-Iron Pipe Is Dependable

If the wrought-iron pipe is *Genuine* it will be durable, long lasting; for *Genuine* distinguishes the formula of puddling and Cohoes has never deviated from the original. Therefore Cohoes — Guaranteed Genuine Wrought Iron Pipe since 1854.

The Handbook, Pipe Facts contains valuable information. We have a copy for you; send for it.

Mayflower—Plymouth Apartment Hotel, N. Y. C.
Emery Roth, Architect
Guaranteed Plumbing & Heating Corporation
Plumbing Contractor

COHOES ROLLING MILL CO., COHOES, N. Y.

BRANCH OFFICES:

PHILADELPHIA CHICAGO LOS ANGELES NEW YORK CLEVELAND
MINNEAPOLIS BOSTON NORFOLK FORT WORTH FORT WAYNE

Where millions are invested—

In ultra modern structures such as this—a monument to architectural and engineering skill—no chance can be taken in specifications—dependability only can be considered! Towering with magnificent lines over twenty stories from the street, this charming hotel-apartment is the result of care and precision in the selection of materials of proven worth—equipment of lasting durability and quality.

Thus, "NATIONAL" Pipe, as in other great buildings, was specified for the major pipe tonnage. Back of all the many luxuries and comforts which this fine housing will offer will be miles and miles of "NATIONAL"—to serve faithfully for many years to come.

NATIONAL TUBE COMPANY

Frick Building, Pittsburg, Pa.

"We have specified Duriron ..... since 1921"

W. G. ECKLES CO
ARCHITECTS
NEW CASTLE, PA

August 19, 1927

SINCE 1921 over six hundred Architects and Engineers have specified Duriron Drain Pipe for the acid waste systems of hospital, school, college, industrial and commercial structures.

The Duriron Company, Inc.
Dayton, Ohio.

Gentlemen:

We have specified Duriron for laboratory wastes in all the schools which we have designed since 1921. It has been very satisfactory.

Duriron was specified by us for three high schools and a hospital which are now under construction.

Yours truly,

W. G. ECKLES COMPANY

RAE:M

Duriron is produced only by

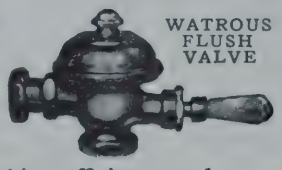
The DURIRON COMPANY
DAYTON · OHIO

The Exact Length of Flush for Every Make of closet

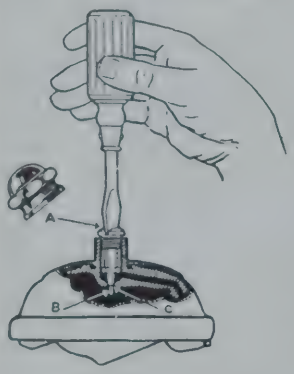
is assured with the

Watrous FLUSH VALVE

THE Watrous flush valve is the only design that makes proper provision for adapting the quantity of water consumed to the needs of *any bowl with which it is used.* The result is maximum flushing efficiency and economy in water consumption.



WATROUS FLUSH VALVE



A Simple Turn of a Screw

By merely turning the screw A (see sketch), the valve is adjusted to the requirements of the bowl. It is not necessary to turn off the water, or remove any of the working parts of the valve to make this adjustment.

The adjustment, once made, remains permanent.

Clogging Prevented

Every time the valve is flushed, the plunger (B) is raised off its seat (C), leaving an opening through which grains of sand, etc., can be washed out of the port. No type of flush valve, without this or a similar safeguard, is immune from obstruction.

No Regulation Required

The feature just described—control of the quantity of water supplied to the bowl—should not be confused with regulation for varying degrees of pressure. *The Watrous Valve requires no regulation,* from highest pressure down to approximately 5 lbs.

Write for full details

PLUMBING DIVISION

Watrous Flush Valves—Duojet Closets—Self-Closing Basin Cocks—Combination Lavatory Fixtures—Pop-Up Wastes—Liquid Soap Fixtures—Etc.

Sold by leading plumbing jobbers throughout the U. S.

THE IMPERIAL BRASS MFG. CO.

1238 West Harrison Street Chicago

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Thos. J. O'Brien, 1812 Exchange Bldg., Memphis, Tenn.
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Dillard Eng. Co., Construction Industries Bldg., Dallas, Tex.
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Complete MILVACO HEATING SYSTEM installed in this modern Apartment~

for over a quarter of a Century manufacturers of Standard Valves and Heating Specialties

Milvaco Thermostatic Trap

Architect: Rissman & Hirschfeld
Mechanical Engineer: Walter C. Ellis
General Contractor: Avery Brundage Co.
Heating Contractor: Crosby & Beard

ABOVE is pictured the new 2440 Lake View Apartment Building, Chicago, Ill. Practical knowledge and careful consideration on the part of the entire building personnel dictated that Milvaco equipment be used.

Heating Specialties:

Milvaco Traps, Dole Milvaco Packless Valves—all types. Air Vents, Air Eliminators, Drip Traps, Blast Traps, Direct Return Traps.

Standard Valves:

Packed Type Radiator Valves, Gate Valves, Globe Valves, Angle Valves. Check Valves.

MILWAUKEE VALVE CO.

Milwaukee, Wisconsin

Winding up a year of Achievement in the Heating Field

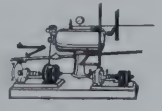
The year now closing has proved more than ever, the value of the Trane policy of engineering development in the specialized branches of heating covered by the Trane line.

Last year, and again this year, The Trane Company has brought forward one improvement after another, in every department. Trane Heat Cabinets and Concealed Heaters have entered their second heating season, securely entrenched in the estimation of heating men as "Successors to the Radiator." The same principle has been applied to unit heaters of unique design and exceptional efficiency. The Type "VM" Multi-Stage Centrifugal Pump has been added to the Trane-built line. New-type traps have been perfected for special uses. Many architects find that the simplest way to be sure of obtaining the most advanced type of equipment is to specify "Trane."

Trane Bellows Trap

Trane Bellows Packless Valve

Trane Bellows Trap — Offset Pattern



Trane Duplex Return Line Vacuum Pump

Trane Duplex Condensation Pump

Trane Type "VM" Multi-Stage Centrifugal Pump

Trane Unit Heater — ceiling type

Trane Unit Heater — floor type

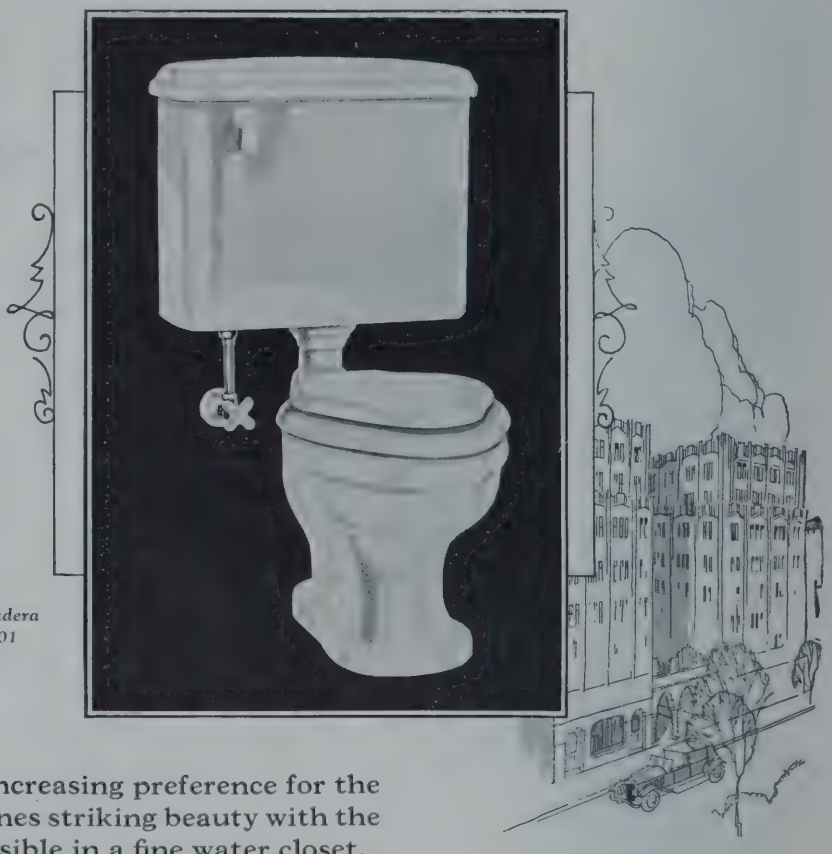
Write for A. I. A. — Indexed Material.

THE TRANE COMPANY, (*Established* 1885)
276 Cameron Avenue La Crosse, Wisconsin

HEAT CABINETS **TRANE** CONCEALED HEATERS

••• PUMPS AND HEATING SPECIALTIES •••

Specified— *for its outstanding superiority*



The Madera K-3001

Architects are showing an increasing preference for the "Madera" because it combines striking beauty with the most perfect sanitation possible in a fine water closet.

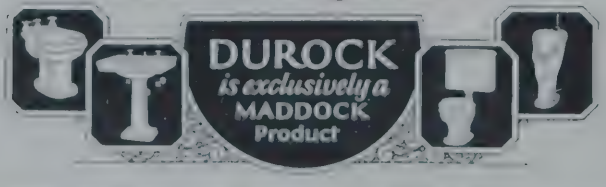
Its very large water surface and extra long seat opening prevent the soiling of dry surfaces by people of any stature. Its gleaming white vitreous china DUROCK bowl and tank, with glass-hard, fused-in surface, can never crack, craze or stain, or offer obstinate lodging places for bacteria. All debris, *even including the sanitary pad,* is positively carried off through the Madera's greater trapway by its powerful twin siphon-jets.

The "Madera" is ideal for installation in residences, hotels, office buildings, apartments and building developments

THOMAS MADDOCK'S SONS COMPANY
DUROCK *Bathroom Equipment*
TRENTON, N.J.

MADDOCK

Since 1859 — No Name has stood for HIGHER QUALITY



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Evernu
Everlasting Hard Rubber
Seats
Patented

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IDEAL SPECIFICATION

Where hard usage is to be expected and long-term economy is important

UNCONDITIONALLY GUARANTEED

The patented Evernu process by which these handsome hard rubber seats are formed, can't be duplicated. It gives them unsurpassed ability to *keep* their good looks through long years of severest service—no scarring, chipping or cracking that smooth, glossy surface; no warping, no loosening of hinges. The *hollow center* gives unusual lightness and unequaled strength.

No wonder leading architects are specifying Evernu Seats for big installations all over the country—schools, hospitals, clubs, office buildings—with perfect confidence that they are giving their clients the best possible value for their money.

Our new catalogs covering all Never-Split Seats —*the only complete line on the market*—should be in your files. A post-card request will bring them promptly.

NEVER SPLIT SEAT COMPANY
Founded 1905
DEPT. 1212 EVANSVILLE, INDIANA, U. S. A.

Well Known Buildings Completely Equipped with
Evernu Seats
include:

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J. C. Penny Bldg., New York, N. Y.
Russ Bldg., San Francisco, Cal.
Ambassador Office and Theatre Bldg., St. Louis, Mo.
Public Schools, New York, Chicago, many others
New York Yacht Club New York, N. Y.
Barlum Hotel, Detroit, Mich.
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NEVER-SPLIT *"Perma-White"* and *"Coloro"* Sheet Pyralin Covered Seats
are creating a sensation!

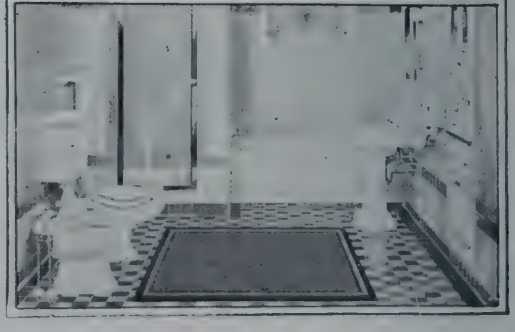
These beautiful new seats, covered with an extra-heavy sheet of snowy white or tinted pyralin, make it possible for the first time, to achieve completely harmonious decorative effects in bathrooms. Furnished in any color desired—pastel blues, greens, yellows, or in brighter shades and combinations.

The pure white "Perma-White" Seats are easily cleaned, stainless and guaranteed.

NEVER-SPLIT SEATS

"Perma-White" Sheet Pyralin	"Coloro" Tinted Sheet Pyralin	"Evernu" Hard Rubber	White "Duco" Sprayed Pyralin	Varnished Wood Patented Construction

The Improved QUIET SI-WEL-CLO



Not Only Sanitary *but* Hygienic

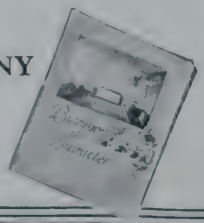
THE Si-wel-clo, like all Te-pe-co closets, has always embodied the latest advances of sanitary engineering. The quietness of its operation has always been an acceptable attribute of this closet de luxe.

The Improved Si-wel-clo is unquestionably the greatest advance in water closet construction of recent years. It is the most comfortable, hygienic, sanitary and quiet closet that has ever been devised. The decided dip in the rim elevates the front and rear of the bowl opening, minimizing the possibility of soiling.

The Si-wel-clo is typical of the entire line of Te-pe-co All-Clay Plumbing Fixtures—closets, baths, lavatories, etc.—sanitary, durable and of irreproachable distinction.

Folders describing this closet combination in detail will be forwarded on request.

THE TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY, U. S. A.
Boston New York Philadelphia San Francisco
Export Office: 115 Broad St., N. Y.



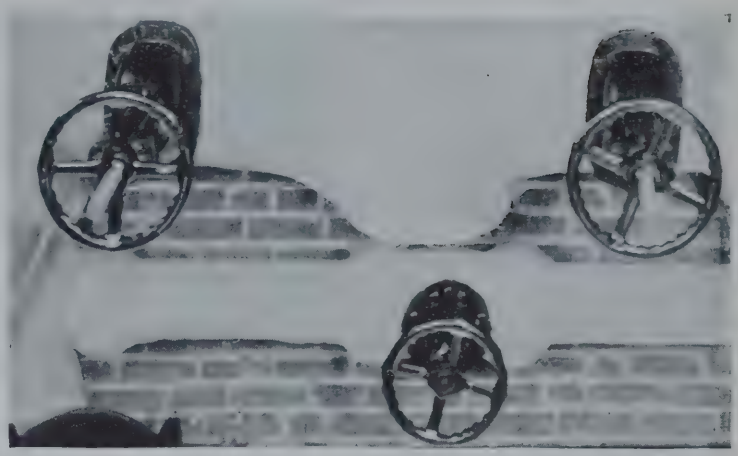
OUR GUARANTEE

The Trenton Potteries Company makes but one grade of ware—the best that we can produce—and sells it at reasonable prices. Our ware is guaranteed to be equal in quality and durability to any sanitary ware in the world. The Te-pe-co Trade Mark is found on all goods manufactured by this company and is your guarantee that you have received what you have paid for.

TE-PE-CO
ALL-CLAY PLUMBING FIXTURES

Right: Jenkins Iron Body Gate Valves, and Iron Body Globe Valves on main steam lines, boiler room, Fred F. French Building.

Below: Fred F. French Bldg., 551 Fifth Ave., New York City, Fred F. French Co., Architects, Baker Smith & Co., Heating Contractors, W. G. Cornell Co., Plumbing Contractor.



A far-sighted valve investment

The Fred F. French Co. is an organization of investment specialists. And one of the most far-sighted of their investments is the choice of Jenkins Valves for the new Fred French Building on Fifth Avenue, New York.

Jenkins Valves were used by the hundred on the large steam lines in the boiler room, in the heating system, and throughout the fire protection work. They are a far-sighted choice, since they can be depended on for long term low cost service free from frequent repairs and replacements.

Make sure that your specification writers are making your preference clear—"Valves marked with the Jenkins Diamond." Ordering by figure number puts substitution out of the question.

JENKINS BROS.

80 White Street.....New York, N. Y.
524 Atlantic Avenue.....Boston, Mass.
133 No. Seventh Street.....Philadelphia, Pa.
646 Washington Boulevard.....Chicago, Ill.

JENKINS BROS., LIMITED
Montreal, Canada London, England

FACTORIES:
Bridgeport, Conn. Elizabeth, N. J.
Montreal, Canada

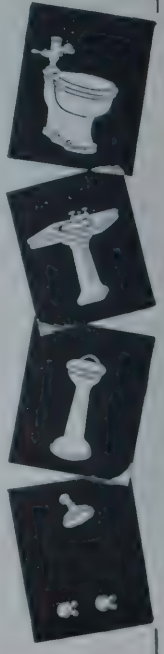
Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

What's the Difference Between a Genuine Vitreous China Urinal Stall and an Ordinary One?

The same difference that you would understand in considering a water closet or lavatory made of anything but Genuine Vitreous China.

The superiority of vitreous china over other materials being well known—the advantages of specifying Douglas urinal stalls are apparent.—Bear in mind they will not craze or discolor, that they are easily kept clean and absolutely impervious.

Although urinals of this kind have been manufactured comparatively a short time, you will find them installed in the better buildings throughout the U. S.



Write for catalogue and list of buildings where the Genuine Douglas Vitreous China Urinal Stalls are being used.

Manufactured By

The John Douglas Co.

Makers of High Grade Plumbing Fixtures

General Office: Cincinnati

Factories: Cincinnati, Trenton

Now a Choice

FOR ANY TYPE OF INSTALLATION

Speakman Chromium Plate—the non-tarnishing finish has made it possible for your clients to install a choice of Speakman Showers and Fixtures with escutcheons and handles of china, metal and of the new Speakman all-metal Artline design.

CHINA
Escutcheons and Handles

METAL
Escutcheons and Handles finished in Speakman Chromium Plate will never tarnish

THE ARTLINE
Massive octagon design in all metal—finished in Speakman Chromium Plate—the Lifetime Finish

All Have the Same Quality Features

These showers and fixtures are all similar in construction and have:

High seat valves — *Swivel discs and encased washers*
Renewable seats — *Full-size waterways*

Folders describing individual types of Speakman Showers and Fixtures are always available. We also shall be glad to send you a pocket-piece finished in Speakman Chromium Plate—the Lifetime Finish.

SPEAKMAN COMPANY, Wilmington, Delaware

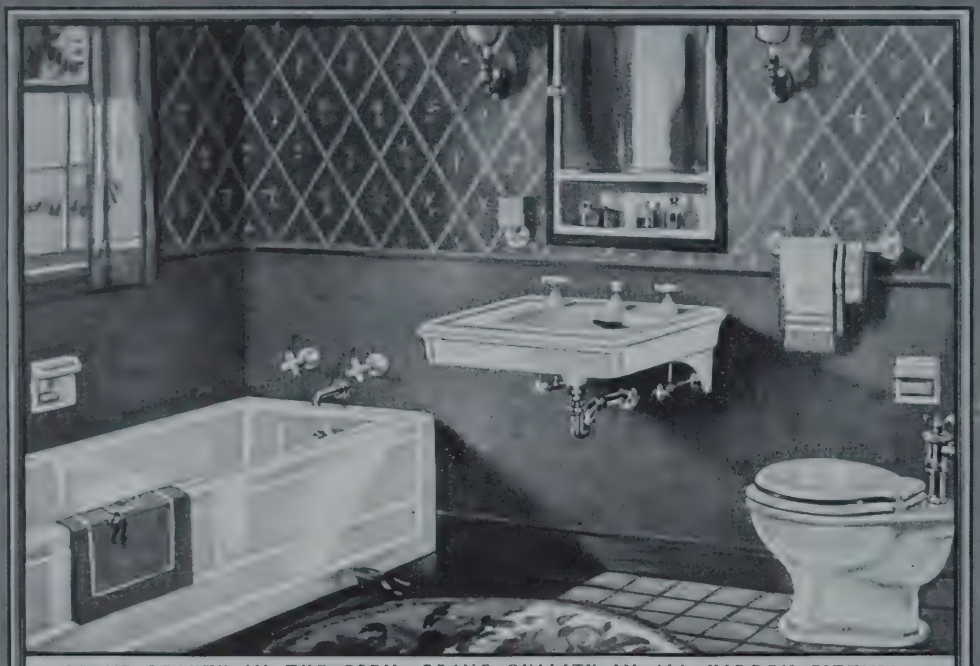
SPEAKMAN SHOWERS *and* FIXTURES

"Safe to build in the wall"

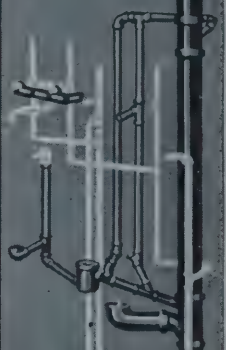
150 Pounds Pressure

CRANE VALVES

2500 Pounds Pressure



CRANE BEAUTY IN THE OPEN; CRANE QUALITY IN ALL HIDDEN FITTINGS



THE ENCHANTMENT OF COLOR

A tiny bathroom, or one as big as a double bedroom; both are given beauty by the wizardry of color. Color that makes the room bright in the morning, color that keeps it cheerful all day, color that soothes like a long remembered melody.

The crisp whiteness of the fixtures is like china, and as easy to clean. The lines are those of easy flowing grace with a utility in every inch unknown in old designs. And every valve and fitting, improved by modern engineering, serves more dependably.

Are you planning new bathrooms, for small homes or large? Then you ought to have *New Ideas for Bathrooms* and *Homes of Comfort*. Two new Crane books, not booklets, that contain many new and valuable suggestions for planning and decorating . . . . Any responsible plumbing contractor will assure you that a complete Crane installation costs no more.

CRANE

Address all inquiries to Crane Co., Chicago

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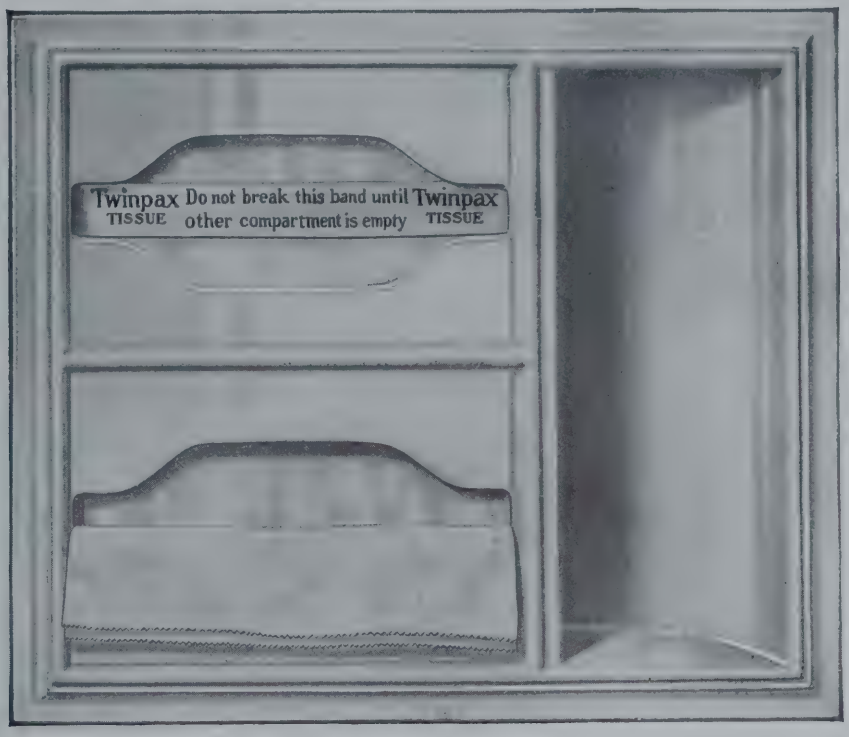

Why Is This Tile Fixture Called "Twinpax"?

BECAUSE it contains not one but two packs of toilet tissue, thus absolutely preventing the inconvenience of the supply giving out. There is always the second packet of paper in reserve in the other compartment. The Twinpax fixture gives great satisfaction wherever used.

Besides this utility feature, the fixture is very attractive in appearance; it can be supplied in any color of tile. The Twinpax tissue furnished with it is of highest quality.

The Twinpax Fixture is recessed (as above) or a projecting type may be had. Ask for details.

NATIONAL PAPER PRODUCTS COMPANY
CARTHAGE, N. Y.

Architectural Service Division

Our A. I. A. filing catalog will be mailed on request

Reviews of Manufacturers' Publications

W. H. JOHNSON & SON CO., 203 East 15th Street, New York. "Acme Radiator Shields and Enclosures."

The concealing of heating radiators in ways which do not interfere with their operation is often a matter of some importance to architects and interior decorators. These folders illustrate and describe Acme Radiator Shields and Enclosures, fitted over radiators, preventing walls or draperies from becoming soiled, and aiding in the diffusing of heat by throwing the hot air out into a room. For use with a low radiator the top panel or shelf, which is likely to be used as a seat, is lined with asbestos board to prevent overheating. When it is to be used with a taller radiator, a galvanized water pan running the full length of the radiator is provided to supply proper humidity to the air. The shield or enclosure is to be had in any of the finishes desired.

THE NORTON COMPANY, Worcester, Mass. "Norton Floors; Safe, Durable, Quiet. Vol. 3, No. 5."

The treatment of floors has been so carefully studied that there has been developed a material which is the best and most appropriate for almost every imaginable purpose. Growth in popularity of bathing pools and their being built in large numbers have of course directed attention to study of flooring materials for use with them, and this issue of the Norton Company's bi-monthly house organ covers the use for such purposes of Alundum Ceramic Mosaic Tile in combination with vitreous tile for the new swimming pool at the Worcester Polytechnic Institute. Several illustrations show the excellent appearance of the floors and of the Pre-cast Alundum Aggregate Treads with marble risers to match which have been used on the stairs.

G. & G. ATLAS SYSTEMS, INC., New York and Toronto. "The G. & G. Atlas Pneumatic Tube System.

The noiseless and smoothly functioning service which renders the operation of the large American hotel or department store so notable is due to careful planning in which many elements have been considered. Asking or receiving data from a cashier's or a bookkeeper's office by telephone, for example, when it can be done at all, is far less satisfactory than securing it in written form which leaves no opportunity for argument when responsibility for issuing data must be fixed or some discrepancy straightened out, and change for a guest or a customer can be had far more quickly and easily than by sending a bell boy or a "cash girl" to a distant desk. These are among the reasons for the development of the highly useful pneumatic tube installations in use all over the country, installations fully illustrated and described in this valuable publication. The booklet should be in the specification files of every architect.

THE HOLOPHANE GLASS COMPANY, INC., New York. "Holophane Catalog." A useful booklet on interior lighting.

The most successful lighting equipment is naturally that which gives at the minimum of cost the maximum in lighting efficiency, this last meaning of course the best distribution of the light. Illuminating engineers have devoted their highest skill to solving problems connected with lighting, and so complete has been their success that one wonders if there are further improvements which could possibly be made. The data presented in this publication have been compiled by the Holophane Engineering Department from investigations, study and practice in the illumination field. On request, the authority for any statement or illumination value as shown will be furnished. For this reason, the accuracy of these data may be absolutely relied upon for all practical illumination design work as applied to Holophane reflectors. The Holophane Company believes that the maximum service from any lighting installation requires careful engineering design and planning in advance of the installation of equipment. To this end, the company maintains a competent engineering department which will draw up complete illumination specifications on a lighting project.

AMERICAN LEAD PENCIL CO., New York. "Venus Pencils" and "Unique Thin Lead Colored Pencils."

The importance which is given by constant use is attached to a detail of work as small as pencils, and of particular interest are the folders or leaflets issued by the American Lead Pencil Co. Especially in the drafting room of an architect or engineer, continual use is made of many grades of pencils, from the extremely hard to the extremely soft, and it is often necessary to use pencils of different thicknesses of leads and of various colors, thin colored pencils being much used for marking blue prints, making layout sketches, etc. The folders give full data regarding the "Ever-Pointed" pencil, which of course requires no sharpening, since re-fill leads are used, and they list as well, the different sizes in which the "Venus" eraser is to be had.

INTERNATIONAL HEATER COMPANY, Utica, N. Y. "The International Economy Warm Air Furnace."

The hot air furnace, which was, of course, the earliest of devices for heating an entire building from one source of heat, possesses certain advantages which procure and probably always will procure its wide use. Much of the success with which this type of heating is used depends upon the design and installation of the furnace itself, and this booklet illustrates and describes the "International Economy," dealing with each of its many parts and giving a two-page illustration of such a furnace when duly installed and ready for use. It also gives in full the standard code regulating the installation of warm air heating furnaces in residences, data which are of course of universal value. This brochure should be had by every architect.

PORTLAND CEMENT ASSOCIATION, Chicago. "Town and Country Houses of Concrete Masonry."

That many architects are now fully familiar with the use of what is known as "concrete masonry" is amply proved by countless illustrations appearing in the publications devoted to architecture and building. Some years ago, while the structural value of this type of building was realized, it was felt by many that structures so built presented a certain awkwardness of design—or perhaps a lack of grace and delicacy. It was plainly evident that use of concrete masonry was not fully understood. This booklet proves that such is no longer the case. It is replete with illustrations of residence structures in quite a number of architectural types, notably the Italian and Spanish, built of concrete masonry units and then surfaced with stucco. The houses, designed by a number of well known architects, afford a new idea of the possibilities presented by use of this valuable and important material, particularly for residences.

MURPHY VARNISH CO., Newark. "Two Painters, Three Minutes Apart." A booklet concerning a finishing process.

There are buildings of many types which must be obtained from such extremely limited appropriations that every possible device for saving must be resorted to if they are to be built at all. Among the details of building upon which saving is often possible is that of finishing interior woodwork, and this folder is useful in giving data regardng a material which by completely finishing woodwork in one operation makes possible saving of both material and time. "One painter applies a coat of Murphy Brushing Lacquer—say, a silver gray or mahogany—to the woodwork. A second painter follows him in three minutes and rubs off the Lacquer across the grain with tow or burlap. The three minutes' wait does not allow the brushing Lacquer to dry thoroughly, but gives it time to penetrate deeply into the softer portions of the grain. The harder portions do not absorb the Lacquer and are wiped clean. The result is a smooth, impervious stain finish of remarkable beauty, showing the grain. The surface is dry to the touch in five minutes, and ready for use in an hour or so. If desired, a coat of clear brushing Lacquer may be applied a little later.

Onliwon

REG. U. S. PAT. OFF.

PAPER TOWELS

The Economical Towel Service

ONLIWON Paper Towel Service has proved its economy in thousands of installations in every type of building.

Hotels, hospitals, schools, factories and office buildings in all parts of the country are now enjoying Onliwon Paper Towel Service —with its distinctive appearance, high quality and far-reaching economy.

Onliwon products are made by an organization with fifty years' experience in the manufacture of paper.

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Reviews and Announcements

DETROIT STEEL PRODUCTS CO., Detroit. "Built-in Daylight with Fenestra Steel WindoWalls."

The increased attention now being paid to giving some degree of architectural dignity to structures intended for factory purposes has brought about the wide use of steel window sash, although much of this increased use has also been due to the utilitarian value of the sash in making possible better light and ventilation. This small brochure deals with the use of steel sash, and it illustrates, describes and lists such details as may be reasonably expected to be had from stock. It also gives data likely to be needed when use must be made of specially designed sash or the details and fittings for them. Particularly useful are the instructions as to the actual installation of these windows in structures built of different materials,—of hollow tile, for example, since practically all tile manufacturers make joint and lintel blocks especially grooved for steel sash, as well as special sill units, which are frequently required.

THE NATIONAL LIME ASSOCIATION, Washington. "Out of the Mud with Lime—Bulletin 317."

The importance of lime in the modern world is great. As with various other spheres of effort, the manufacturing and marketing of lime have been organized, systematized and correlated, and the different "bulletins" issued by the National Lime Association are accepted as the official publications of the industry. This particular bulletin deals with the use of lime for roads. It discusses the types of lime required for the purpose, the necessary qualities of such lime, and the quantities likely to be required for building roadways of different depths and widths. Many of the Association's bulletins have a distinct value to architects and builders, such as those entitled: "Lime and Lime-Cement Brick Mortar"; Watertight Concrete"; "Whitewash and Cold Water Paints"; "Lime Stucco"; "Building Code Requirements for Lime"; and "Standard Specifications for Lime Plaster." All these publications are easily to be had.

ARMSTRONG CORK & INSULATION CO., Pittsburgh. "Refrigerated Drinking Water." Frequent necessity of its use.

Provision of filtered and refrigerated drinking water throughout buildings of many types has made rapid strides during the last few years. In structures of certain kinds it is very nearly as important as the circulation of hot water, which of course is universal. Take for example, a hotel where a guest must either drink water from the bathroom faucet, water often tepid by reason of the nearness of the cold water pipes to those carrying the hot, or else call for a bell boy who after a time brings in the old fashioned pitcher of "ice water." A far better and vastly more economical method of supplying drinking water is made plain in this booklet, a method now widely adopted not only for hotels, but for mills, factories, hospitals, schools, institutions, public buildings, office structures and stores. The careful insulation of the supply pipes conserves the coldness which makes the water palatable and use of the system practicable.

ADD-A-UNIT PARTITION CO., Chicago. "Catalog No. 35, Showing Add-A-Unit Partitions." For subdividing areas.

Modern business of almost every kind requires areas of one sort or another which must be given seclusion or retirement. In banks it is necessary that cashiers, tellers, accountants and certain officials be given privacy and sometimes protection; physicians and other professional men find it necessary to have rooms for consultations; and business of nearly every sort makes much use of private offices. Often, indeed, an entire floor of a large loft or office building must be divided up to serve different departments and many executives, and all this involves use of partitions which are not parts of a building's structure, but movable so that they may be moved when necessary. This well produced brochure is one result of 35 years' experience upon the part of the Add-A-Unit Partition Co. It illustrates and describes the portable partitions of different kinds made by the company, and equipment plans and detailed drawings show the method of their construction.

ELECTROL INC. OF MISSOURI, St. Louis. "The Oil Burner with the Master Control." An important detail.

The advantages of using oil as fuel for heating are so apparent that little study or investigation is required for recognizing them. Among the many, however, there are a few which might be singled out for attention. First of all, there is the possibility of securing *even* heat, so even in fact that the temperature of a house need not vary more than a few degrees during an entire winter. Then too, by use of thermostatic control the temperature may be varied at will and without personal attention. Then again, since oil requires but little in the way of storage area, and that little generally outside of a house, the valuable basement area often given up to storage space for coal is made available for other purposes,—an advantage which possesses considerable appeal to architects. This important brochure, replete with data on a valuable type of equipment for using oil as fuel, gives information on every detail probably needed.

BRYANT HEATER & MFG. CO., Cleveland. "Handbook on Heating Buildings with Bryant Gas Boilers."

For use in localities where supplies of natural gas or the prices demanded for manufactured gas render them possible, there is nothing in the way of heating equipment more desirable than gas-fired boilers. The advantages of gas as fuel are numerous, for it requires no space for storage, does not have to be handled, and a boiler so fired demands no attention when once the flame has been started,—these three advantages being among the many. This brochure illustrates and describes the fine line of boilers supplied by the Bryant Heater & Mfg. Company, boilers of all sizes and capacities, from the extremely small, useful for heating a "small house in which insulation has been employed to the fullest extent, or as an auxiliary to heat an obstinate corner of a warm-air-heated house," to larger sizes calculated to meet heavier demands. The brochure is replete with data for calculating the sizes of boilers, whatever the gas.

S. Grant Alexander announces his change of address from the Chamber of Commerce Building to 113 College Street, Asheville, N. C.

For Rent. Part of room with north light and use of drafting board. Beatty & Beatty, Landscape Architects, Room 1725, 101 Park Avenue, New York.

Announcement is made by George R. Mann, Harry D. Wanger, and L. Milton King, former members of the firm of Mann & Stern, of the formation of the firm of George R. Mann, Wanger & King, with offices in the Donaghey Building, Little Rock.

The advertisement of the American Seating Company, page 83 of THE FORUM for September, 1927, contained several illustrations of the interior of Emmanuel Church, La Grange, Ill. Credit for the designing should have been given to Marshall & Fox and John N. Tilton, Associated Architects, and to the Bertram Grosvenor Goodhue Associates as Consulting Architects.

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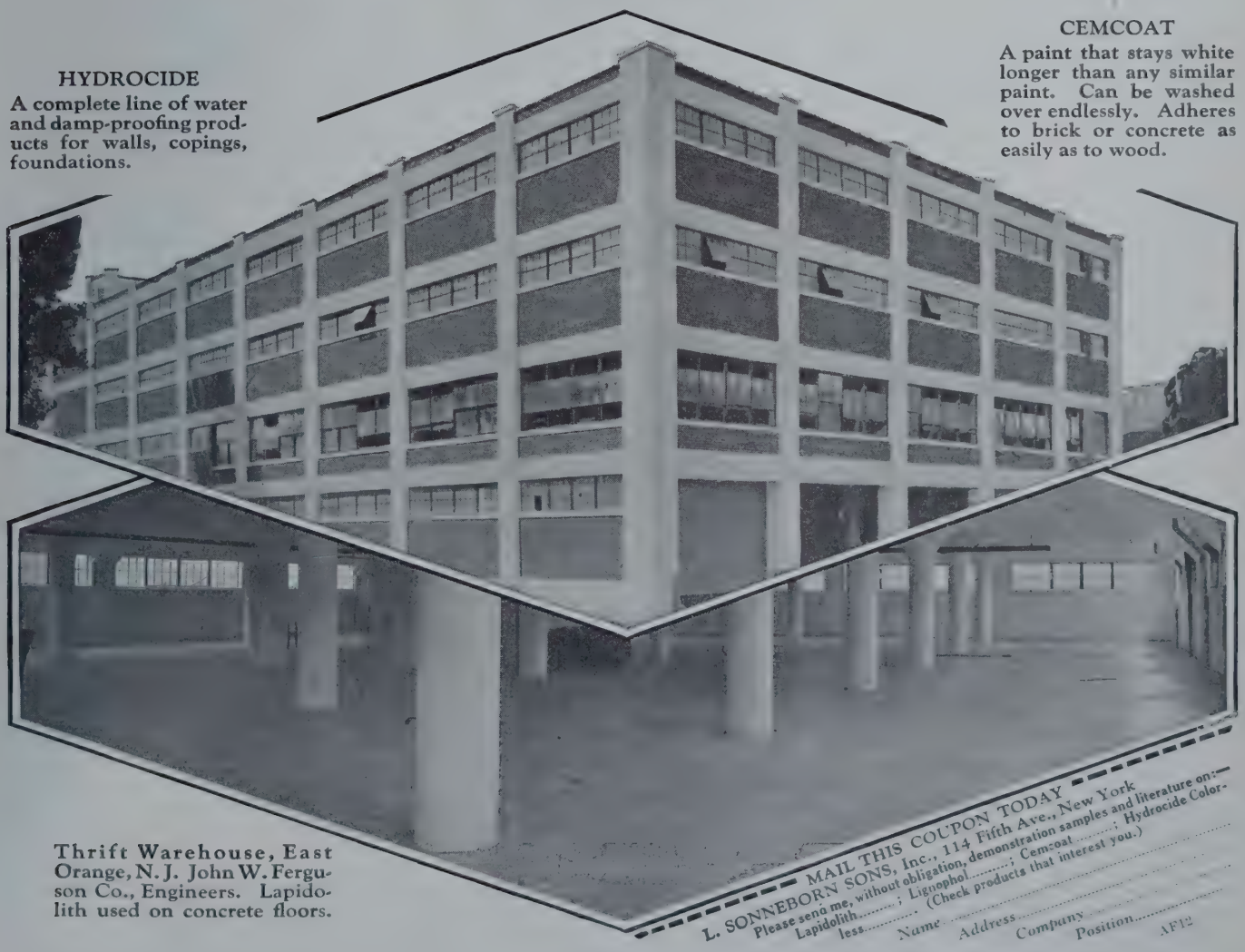

Thrift Warehouse, East Orange, N. J. John W. Ferguson Co., Engineers. Lapidolith used on concrete floors.

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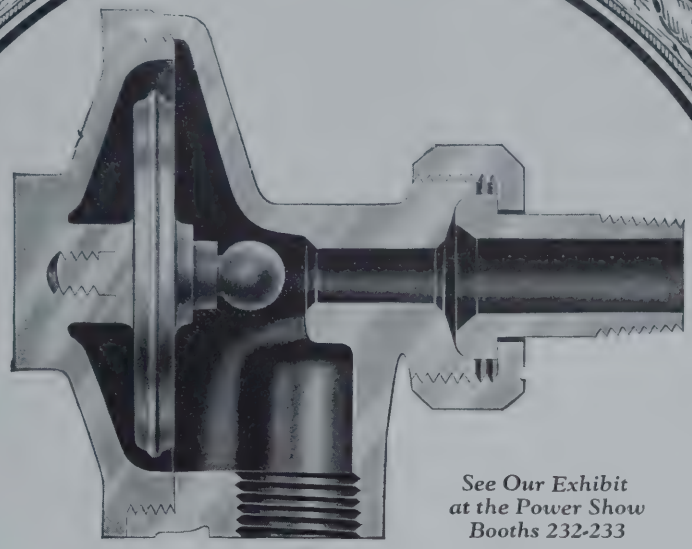

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Write for Vapor Details Bulletin 22

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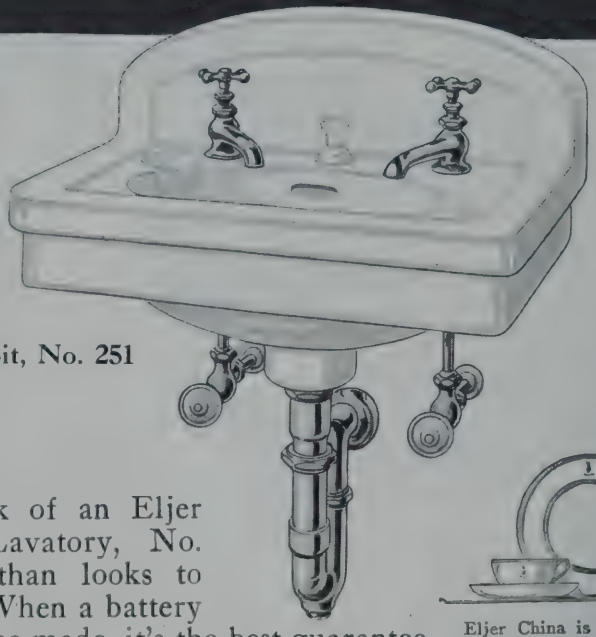
CHICAGO

This graph demonstrates visually the value of Eljer "curved top" lavatories in battery installations. The tops of the straight backs are clearly out of alignment. The high points of the curved backs are equally varied—but the eye is outwitted by the curve. The curved top is another safeguard to a satisfactory installation.



New Detroit, No. 251

Eljer China is similar in texture to the finest French Table China—But with the added toughness necessary to withstand rough usage. Acidproof and rustproof.

THE curved back of an Eljer New Detroit Lavatory, No. 251, has more than looks to recommend it. When a battery installation is to be made, it's the best guarantee of satisfactory alignment one could wish!

Given straight top backs as shown in the upper graph, the slightest discrepancy in height of backs shows up like the irregular top of a fence silhouetted in the moonlight. A quarter-inch variation isn't much to the Eiffel Tower, but it's too much on a battery of lavatories.

But the curved back—there's the trick! The eye cannot estimate how high or low the high-points are, and a uniform end-to-end battery is the visual result.

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